

Cadaver Dissection and the Ritual Transformation of Medical Students

By

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## Abstract

Human cadaver dissection is a common component of Western medical education. While most students react emotionally to the presence of such a deeply-held symbol of death, the expression of emotion is often seen as unprofessional, irrational, and subjective in a community that values rational objectivity and professional emotional distance between physician and patient. Thus, the cadaver dissection room becomes a site for practicing the management of emotion while manipulating the bodies of others. These skills are translated to interactions with living patients, and qualities of the cadaver dissection experiences are reproduced in other domains within the practice of medicine.

Through interviews with 10 health care workers who had taken cadaver dissection as part of their professional training, I elicited narratives describing dissection experiences and analyzed them for patterns indicating emotional reactions to cadaver dissection. The respondents' various methods of dealing with psychological stress included crass humor, referring to cadavers as living patients, and focusing on procedures, among other coping behaviors. The different reactions and opinions they expressed indicate that cadaver dissection is a highly ritualized program for conditioning and socializing physicians.

Keywords: medical anthropology, medical education, cadaver dissection, emotion management

## Introduction

Medical schools in the United States have recently initiated programs to directly address the transition student physicians make when moving from the cadaver dissection laboratory to the clinical setting. While the formal courses addressing the transition are relatively new, the research it is based on has been on-going for several decades (Becker, 1961). My research explores the use of cadaver dissection to instill values and socialize Western medical students to behave properly as physicians who will deal with living patients. Responsibilities of physicians include manipulation of patients' bodies and maintenance of a "professional distance"; emotional reactions are taboo. Professional distance is one of many values inherent in the biomedical model employed by Western medical institutions and instilled in students as they pursue their education. One method of reinforcing the importance of professional distance is the socialization that occurs in the cadaver dissection laboratory, where student physicians practice their skills in managing emotions.

Medical anthropologists analyze and critique the educational system of Western medicine in an effort to better understand the process of producing biomedical physicians. In the West, medical knowledge is largely based on the technological model of health and illness (Scheper-Hughes and Lock, 1987). This model is characterized by a reliance on technology and a mechanistic view of the human body (Davis-Floyd, 1987). For some physicians, the methods employed by educational institutions produce desensitization to the cultural components of health and illness. Several researchers have sought to understand how this professional detachment is instilled in medical students, and their research has implicated cadaver dissection

as a site for learning to interact with human bodies in a professional manner (Hafferty 1988, Helman 1991, Lella and Pawluch 1988).

This desensitization process can be problematic for physicians and future patients alike. Many people express concern over the perceived detachment of health care workers (Hafferty 1991, Davis-Floyd 1987, Lief and Fox 1963). There have been many pushes recently for medical institutions and professionals to incorporate the cultural aspects of healing: birthing suites are becoming more comfortable and social, and prayer circles are increasingly part of the prescribed treatment for some disease in many communities. Increased understanding of the power of the placebo effect has shifted some of the emphasis of treatment from the biomechanical or biochemical aspects of healing to the sociobiological elements.

I seek to contribute to this body of research by addressing these questions: In what ways does cadaver dissection represent the medical school experience, and how does cadaver dissection contribute to the professional distance that is part of the biomedical physician's approach to treating patients? Do medical students react emotionally to dissection? How do they process and manage their emotional reactions?

For most medical students, the first cadaver dissection session is an emotional event (Lella and Pawluch, 1987). While many students see human cadaver dissection as an overall positive experience, a small percentage experiences the intimate contact with inanimate human bodies as traumatic. Nearly all medical students have some emotional response to the anticipation of the initial dissection session, whether it is excitement or fear of fainting, of cutting badly, or of contracting diseases. Many physicians recall their cadaver dissection

sessions as significant life events, in addition to acknowledging their importance in knowledge acquisition (Lempp 2005, p. 319).

Cadaver dissection can be viewed as a microcosm for the entire medical education experience. The socialization of physicians that occurs in the dissection laboratory is just one of many similar rituals that serve to reinforce the tenets of the technological approach to practicing medicine. The biomedical symbols are continuously used to help student physicians achieve the western “medical gaze.” According to researchers Byron J Good and Mary-Jo DelVecchio Good (1993), the medical gaze describes “distinctive forms of reasoning about the world”, and these forms of reasoning are learned in medical school (pp. 83). The Goods interviewed students at Harvard Medical School, and concluded that cadaver dissection is an important contributor to the students’ reconstitution of the objects of their medical gaze—medical knowledge, the diseases studied, and the patients they will eventually treat. One of the qualities instilled in and promoted in student physicians via the ritual of cadaver dissection is the proper management of emotion. This skill is rehearsed around the cadavers and later with living patients.

A deeper understanding of the socialization of medical students through cadaver dissection will provide a better understanding of the ways in which western physicians are taught to view their patients, and this knowledge can be used to evaluate and further develop and improve the process of creating physicians.

As a former cadaver dissection student, I have long been fascinated with both human anatomy and the process of dissecting a human cadaver. As a graduate student studying medical anthropology, I worked for two years as a laboratory instructor for the Human Anatomy program at the University of Kansas, teaching undergraduate students how to dissect cadavers

(2010-2011). In addition to my own potent memories of facing down my first cadaver and of the long, long hours spent becoming intimate with the flesh of another human, I also have served as instructor for several dozen students as they learned to dissect cadavers. I heard their squeals of fear or excitement, witnessed their hesitations and reactions, and contemplated how to best aid them as they navigated through many emotional and intense learning experience. I showed them how to dismantle the human thorax, remove the organs, saw through bone, and identify tissues by texture. Assuming the role of instructor allowed me a much deeper appreciation of the emotional and social impact of cadaver dissection on students. I choose to undertake this research project to obtain formal subjects' narratives in an effort to augment my own experiences and broaden my perspective on human dissection.

This study has three purposes. The first is to evaluate the narratives of the subjects to look for signs of emotional reaction to cadaver dissection, particularly the initial dissection session. The second is to search for evidence of coping behavior from the subjects in effort to process and manage their emotional reactions. The third is to obtain a sampling of opinions from student physicians about their experiences with cadaver dissection and their beliefs about its role and effect in medical training.

### *Participants*

The sample consisted of ten U.S. adults who ranged in age from 21 to 41, with a median age of 28.6. All had completed an anatomy course that included cadaver dissection as part of their training. There were four females and six males. Eight subjects were graduates of medical school; of these one came from an osteopathic program. One subject was a biology professor and an athletic trainer for a collegiate sports program. One subject was a nursing student who



had taken and taught human cadaver dissection courses during her undergraduate training. Of the eight medical school graduates, two were interns (both in their first year- one in emergency care and one ears/nose/throat specialist), five were residents (two in internal medicine, one each in surgery, medical pediatrics, and anesthesiology), and one was a fellow in pulmonary critical care.

### *Instruments*

Subjects were interviewed in small conference rooms in the University of Kansas hospital and the Truman Medical Center in Kansas City, Kansas and Kansas City, Missouri. The interviews were semi-structured and recorded via digital recorder and transcribed later. Subjects were asked a series of ten questions, and follow-up questions were tailored to each individual narrative. The interviews elicited qualitative data, ultimately seeking “thick description” narratives that illustrate the emotional socialization of student physicians. Subjects were encouraged to narrate their experiences with cadavers, including their first dissecting experience, and the emotional and psychological impact. Subjects responded to prompts such as “Tell me about your first experience dissecting a cadaver...” before being asked scripted questions and follow-up questions based on their answers:

1. What qualities are important for competent dissection?
2. Do you remember your first encounter with a cadaver? Were you nervous?
3. Did instructors address the topic of respect for the cadavers? What types of behavior were considered disrespectful?
4. In what ways did you observe others behaving around the cadavers? Did you give them nicknames?

5. Did you or other students express discomfort, fear, or apprehension for any of the dissection assignments? Any dreams about cadavers?
6. Did you or others make jokes or crass humor about the cadavers or their body parts?
7. Did you imagine personalities or life circumstances for cadavers? Did you attend any type of memorial service for them?
8. Do you feel competent to dissect cadavers? To treat living patients?
9. Did your medical school specifically address the transition of skills from cadavers to living patients?
10. Do you think cadaver dissection was beneficial for learning anatomy? Essential? Was it a positive or negative experience over-all? Do you think you could get the same level of instruction without the use of cadavers?

### *Methodology*

I reviewed the interviews to look for trends within the subjects' use of narrative to create a sense of understanding with regards to the cadaver dissection experiences. The narratives offered by subjects can be seen as stories with the usual associated structures: plot, characters, a timeline, a climax of conflict, etc (Janzen 2002). For some of the subjects interviewed, the conflict within their own minds was a primary focus of their stories.

Cheryl Mattingly argues that narrative functions as a scaffold for the construction of interpersonal relationships and is a component of caregiving (Mattingly 1998). She describes the process of "therapeutic emplotment," as "an effort at story-making...integral to the healing power of the practice" (Mattingly 1998, p2). In this process the therapist and the patient negotiate a narrative of experiences to achieve a goal of better health for the patient. This necessarily

requires a series of interesting psychological processes, including a retrospective approach from an imagined future (Mattingly 1998, p 155). As the subjects negotiate forward toward their imagined endpoints, they must elucidate “alternative outcomes of inherently ambiguous emotional, moral, and therapeutic situations” (Janzen 2002, p168).

This narrative is modified by both patient and therapist as they continue to interact and negotiate the real end results. Arthur Kleinman and Erin Fitz-Henry further elaborate the nature of negotiated narratives: “Experience is inter-subjective inasmuch as it involves practices, negotiations, and contestations with others with whom we are connected...We are born into the flow of palpable experience, where our senses are first patterned by the symbols and social interactions of our local worlds. But our emergent subjectivities also return to those symbols and interactions, reconfiguring, repatterning, and sometimes even completely reinterpreting them” (Biehl, J; Good, B & Kleinamn, A; eds. p 53).

The subjects I interviewed constructed, edited, and rewrote their experiences with cadaver dissection in a negotiation with themselves, each other, their cadavers, and with me--in order to find meaning in the somewhat gruesome experiences. They needed a type of healing- a need for meaning and closure- that they achieved in part through narratives. “In this setting, story not only lends coherence to a condition of suffering, but it may set into action some of the ineffable symbolic and biochemical forces that heal life and limb through mechanisms that Selye and others have explored” (Janzen 2002, p170).

For one subject, the narrative centered around an initial dramatic reaction to animal dissection, prompting a moral objection to dissection as a whole, later followed by a conversion to enthusiastic support of dissection. For her the moral ambiguities involved in cadaver

dissection became the focus. For others the narratives described conquering a very difficult task or achieving professional distance easily. Each created their own meaning from the experience in their own construction of narrative.

## Narratives

The subjects of this study reported a wide variety of reactions to and beliefs about cadaver dissection. The general sentiment of the subjects seemed to indicate that they all felt challenged by the course and considered it a fundamental and essential component of medical education. Most described at least a minor emotional reaction to initial cadaver dissection, but the severity or extent of the reaction varied considerably.

The subjects also indicated a variety of approaches to the establishment of cadaver-room culture. While some reported instructors that made it clear that disrespect in the form of nicknames was expressly forbidden, others reported the process of nicknaming cadavers to be acceptable. While some instructors maintained a very solemn and somber laboratory, others allowed a more permissive and light-hearted approach to dissecting the cadavers.

While some medical schools have begun to institute funerary services for the families of those that donated their bodies to dissection programs, this practice is not universal. For some subjects, it was a strange idea to attend a personal rite of the family of the cadaver, while for others it seemed obligatory. The attitudes of the instructors and the orientation held on the first day of the course have a large impact on the attitudes and behaviors of the students.

Additionally, most subjects indicated that not all students started out with the same level of experience with dissection. While most indicated that medical school was their first encounter with a cadaver, several noted that some students in their lab came in to the class with undergraduate experience in cadaver dissection. This made quite a difference for some of the subjects in the level of comfort for the primary dissection. Some subjects reported essentially no initial remarks from instructors, but instead a “throw ‘em to the sharks” approach, in which

they were handed scalpels and manuals and told to start dissecting. Others reported substantial discussions about professionalism that lasted more than an hour. In some cases the students did not dissect at all on the first day of class, but instead received instructions, were given assignments, or given time to study using models. These policies were set up to allow students to familiarize themselves with anatomy before they actually began work with the cadavers, ideally producing less destructive mistakes.

## 1. Qualities important for dissection of cadavers

What qualities are important for competent dissection?

Ninety percent of the subjects responded that respect for the cadaver was important, while one that did not mention respect did mention professionalism. “I think that was one of the biggest things, just maintaining a level of professionalism, and separating, or at least trying to separate the emotional connection that you would have to a person and we looked at it more in terms of ‘this is a cadaver, this is a...it is a human body but this is not a human’...you know it is like dissecting a frog or a cat or any other kind of animal that you would come across in a regular biology lab” (27 year-old physical therapist).

Other responses were less common- including preparation for each dissection laboratory session, an appreciation for physiology, and an emphasis on procedure. Most subjects indicated that anatomy was the primary learning objective of the course, while the amount of time spent on physiology varied considerably from almost none to quite a lot. A student nurse responded that her instructors prompted them “to not just learn the parts, but also the bigger picture. This tendon is here, and it moves this part. They incorporated function. That was helpful, too,

especially if you were taking the lecture at the same time” (21 year-old female student nurse). Students were generally encouraged to “think anatomically,” to relate structure to form and function.

Several subjects indicated that physiology was taught informally during the course, but that information was rarely if ever part of examinations, which were primarily practical exams consisting of identification of tagged anatomical structure on cadavers and plastic models. Only one subject mentioned preparation as an important component of cadaver dissection.

“You could see in the group that some of us that had more of a science background were more comfortable using the tools and actually doing the cuts, whereas some people that hadn’t had that preparation beforehand were more apprehensive about making cuts and they were really fearful of messing up or ruining something. But I think that preparation- you know before we even brought the bodies out of the tanks we talked about how to use the tools and the types of tissues and the approaches you would use- you know we would have to have our prep done before we did any cutting. So I think that was what prepared us the most, was knowing what we were doing and what we were looking for before we ever went in there” (27 year-old female physical therapist).

A few subjects mentioned that they were given some instruction with regards to procedure, but were never tested over it as part of the coursework. In contrast, a fourth-year surgery resident reported virtually no instruction on procedure. “They didn’t say much about how to use the instruments or what to use for dissecting, which kinda sucked, because most of the time I would end up cutting through something accidentally” (29 year-old male surgery resident). The emphasis was on memorizing anatomy and cutting the bodies so that they could be used as tool for that instruction, rather than on any kind of preparation for a surgical career.

## 2. Feelings on the first day of dissection.

Do you remember your first encounter with a cadaver? Were you nervous?

Only one subject responded that he did not remember the first day of anatomy class. The medical school he attended scheduled the anatomy course during the second year of medical school, so for him it was not a memorable or nerve-wracking event. “It was another class. It was not my first foray into the studying of medical school” (41 year-old male pulmonary critical care fellow).

Ninety percent of all subjects described remembering the first day of dissection and all had varying degrees of anticipation and/or anxiety. One student nurse said she did not feel apprehension about confronting the cadavers for the first time, but did notice anxiety in some of her classmates. “I didn’t necessarily have any- I was just intrigued, I guess, just to get the initial view of a cadaver, but there were definitely students that sort of stood back while others gloved up and got in there, but by the end of the course, pretty much everybody was comfortable” (21 year-old student nurse).

A more typical response was similar to the experience shared by a resident: “I was pretty nervous. I was scared I would be nauseated or that I would find it really hard to cut a human, or that I wouldn’t be good at it. You know, you realize that this is really a huge, huge deal, and you know, to have the opportunity to learn hands-on is a big opportunity, so you know those fears and thoughts, going into it. It’s very nerve-wracking the first day. And you know you’re nervous about seeing them- you know, like a lot of students didn’t want to look at their faces. That’s kind of nerve wracking” (28 year-old female internal medicine resident).

Other subjects described the first day of anatomy class as “surreal” or “intense.”



For one resident, the first day of class was very memorable and somewhat traumatic. When asked if he remembered his first experience with a cadaver, he immediately responded:

“August 2005. Very first course of medical school, actually, is anatomy. It was rough!...For me it was especially rough, because I got accepted to medical school one week prior to that course starting. I was like the last person inside the door, so I go from that- the elation of being in medical school- to a ridiculously hard course of anatomy. It was quite difficult. I guess I shouldn't be too surprised that I did incredibly poorly on the first exam...I just didn't expect it to be that difficult- and that was a big eye opener for medical school in general, because medical school is incredibly hard. I couldn't believe how hard it was, after going through it. But that class gives me nightmares” (28 year-old male anesthesiology resident).

For him, the class was clearly a microcosm for the experience of medical school. The class and medical school in general affected him strongly, and he carries those memories with him today, as seen in his animated responses to questions about the first day of anatomy class, and confrontation with a human cadaver. “The first day was the dissection of the back- I recall this lecture quite clearly because I was sitting in row two and luckily, they divided each team into days of dissection, so luckily I didn't get the first day of dissection, because I would have been so overwhelmed. I'm still overwhelmed right now. I couldn't even do that now. I don't think I'd pass that class if I took it now. One thing- right when you walk in the door, the smell just hits you- and you're like, ‘Wow...this is disgusting’” (28 year-old male anesthesiology resident).

Several subjects indicated a minor level of anxiety which went away as they became more comfortable.. When asked if he was nervous, one subject said “A little bit, yeah, but that faded after about ten seconds” (28 year-old male osteopathic internal medicine resident). For others, the process took a bit longer. “I think it took about a week- to quit feeling very, sort of

disconcerted, to feel like- for it to normalize- to become a routine. Maybe a couple weeks.” (28 year-old female internal medicine resident).

The first dissection session, or the first several, clearly stood out in the minds of most of the subjects, and they had stories readily available to share to describe their emotional reactions to the cadavers. Most were nervous and anticipatory to varying degrees.

### 3. Respectful behavior in the laboratory.

Did instructors address the topic of respect for the cadavers? What types of behavior were considered disrespectful?

One hundred percent of the subjects indicated that they had instructors that specifically addressed the issue of respect toward the cadavers. The instructors typically emphasized that the cadavers had been living, breathing people and had donated their bodies to science. The students were encouraged to appreciate that sacrifice and to treat the cadavers respectfully at all times. The way each school defined appropriate, respectful behavior however, varied to some degree.

Seventy percent specifically mentioned some type of joking about the cadavers as taboo, while thirty percent of the subjects remembered receiving instruction to never remove or throw away body parts. One resident remembered her instructor giving a list of taboo behaviors around the cadaver. “They gave us specific examples, like don’t just stick your scalpel in it, you know, make sure that when you’re doing something, that you have purpose, just basically not defaming the body, not making crude comments, things that would be inappropriate, that you wouldn’t feel comfortable saying to the person if they were there, or a family member if they were there” (29 year-old female medical pediatrics resident).

A dean of one of the medical schools seemed to make an impression on one subject and summed up the general sentiment of the initial cadaver instructions described by the subjects very well. “We had a comical dean that said you know medical students are stressed out, rambunctious, mischievous creatures, because they are always doing something to relieve stress, but at any point if you use a cadaver as an outlet for that kind of thing, you will find yourself expelled quicker than anything at this school. He made mention of the sacrifice made by these people and that they were for educational purposes only. Anything else would not be tolerated” (27 year-old male ENT intern).

Most of the instructions also emphasized the concept of purposeful, informed dissecting, in order to both show respect to the cadavers and also in order to not destroy anatomical structures, such as severing a vein, nerve, or artery that was not supposed to be cut. “Some people would try to get done quickly, but they would emphasize the process, you know, learning from every step. From this dissection, you understand that this nerve goes through this muscle, and they have you learn every little thing at every point, and you have this huge guide that guides you through it, and that was enormously daunting. They told us that we were not allowed to name our cadavers because that would be a sign of disrespect” (28 year-old male anesthesiology resident)

One subject remembered her teacher ban cameras and any type of photography from the laboratory. Nearly all of the subjects indicated that they kept the faces of the cadavers covered with towels during the dissections, although they cited different reasons for doing so. While some considered it a sign of respect to the cadaver, some covered the faces to avoid having to look at them and to purposefully avoid thinking about the fact that they had once been real

people. Most subjects cited another reason for covering the faces, and any other body parts that were not being dissected: to keep them moist and pliant and prevent them from becoming dried-out and difficult to dissect. Several noted more than one of these reasons to cover the faces.

Ninety percent of the subjects dissected the faces at some point in the class. “We always had to make sure they were covered- especially the face- oh I forgot to mention the face because at St Louis University, all the bodies are donated to science. These are real people that chose to give their bodies up after they died for our dissecting purposes. So they are very adamant- don’t do anything lewd or crude with the bodies, names are not cool, because these are real people. That’s the first thing they told us actually” (28 year-old male anesthesiology resident).

#### 4. Observed peer behaviors.

In what ways did you observe others behaving around the cadavers? Did you give them nicknames?

The subjects indicated that cadaver laboratory culture varies considerably from institution to institution, and student responses to the cadavers vary considerably as well. One particularly divisive concept was that of giving the cadavers nicknames. Some saw this as utterly disrespectful and officially taboo, others reported that it was commonplace and a normal part of discussing multiple different cadavers with other students and instructors. Forty percent remembered instructors expressly forbidding the use of nicknames. The other sixty percent incorporated names as a way to logistically keep track of sometimes as many as fifty cadavers in a laboratory. These were more affectionate than humorous. Examples largely consisted of actual human names: Annie, Big Joe, Bernie, Bob, Judy, etc.

For some, giving nicknames was a way to overcome emotional distress about cutting into cadavers: “I think for some people, it made it more comfortable when they’re...I can’t remember if we named ours- we had a group- but I think that people did, and it helped them get comfortable with the idea” (29 year-old female medical pediatrics resident).

Most of the subjects said they were trying to alleviate the tension of the cadaver laboratory and humanize the cadavers a bit. “...they were never derogatory names- they were more affectionate. You spend a lot of time with it, you feel weird calling it the cadaver. So you start to humanize it a bit....mine’s nickname was Bernie. From Weekend With Bernie.....Because we spent a lot of time with him. I don’t really remember the other ones- they were mostly just names- to call your cadaver something” (28 year-old internal medicine resident).

The majority of the respondents saw very little if any behavior they would consider disrespectful toward the cadavers by other students. One resident noticed that some negative conversations may have occurred “...near the end of the semester when you were really comfortable around it. Just talking about how fat this person was or how disgusting this one smelled or something” (29 year-old male ENT surgery resident).

Many of the students tried to minimize their time in the lab, due to the uncomfortable nature of the room, and/or the noxious smell. The preservative used to store cadavers can be unpleasant and oppressive. “There were people that- it did bother them, and occasionally someone would pass out or something, or get sick. I mean the smell, that would get to me, and kind of bother me. When I was done with the first year of medical school, I was glad to be done with the smell of the anatomy lab because I hated the smell of cadaver. I lived with my sister,

and she hated it when I didn't change my clothes before coming home" (29 year-old female medical pediatrics resident).

While studying late into the wee hours of the morning is a common activity in medical school, the cadaver lab may be a daunting place to spend the midnight hours alone. This fact may have been alluring to some students that wanted to prove their ability to face such a daunting task.

"We usually did dissections early in the mornings, between five and nine am....and then we had classes after nine. So we would study for exams late at night, and sometimes then the students would be a little more leery of the cadaver room. You know it's dark, and there's not that many people around, and people we be a little freaked out. If you were the first person to get to the lab for the study group, you wouldn't go in until somebody else got there. Nobody really wanted to be alone in there. Although we had the other extreme, I guess. There was a guy that said he stayed there all night. We were all studying and everyone left to go home and sleep and when we come back early the next morning, he was still there and said he just went in a side classroom and slept on a desk, with the bodies still out and everything. And he seemed to have no problems. So we had the girl that couldn't get over the smell and the guy who was about ready to crawl in there with the cadavers. Two extremes" (27 year-old athletic trainer).

##### 5. Discomfort and dreams about dissection/cadavers.

Did you or other students express discomfort, fear, or apprehension for any of the dissection assignments? Any dreams about cadavers?

Only one subject reported having dreams about cadavers, and she was also the only one that reported her instructor mentioning nightmares in his orientation lecture. When asked about her orientation lecture, she specifically remember her teacher mentioning nightmares. "I remember him talking about the emotional part of it, and he said they there had been students in the past that had really struggled with getting past the point that this was someones' grandma, or

brother....and he said he'd had students that had actually had nightmares about the cadavers in the past, so that was something that he really focused on" (27 year-old female athletic trainer).

The same subject later indicated that she had in fact had her cadavers manifest in her dreams. Interestingly, she never dissected or even saw the faces of the cadavers dissected. "So I had dreams- never really nightmares. But I would dream about seeing these people in real life- but I could never see their faces. Because we kept those covered all the time, so I never had that true physical identification with them, so I would always have dreams about them and I would know that they were the cadavers that we were working on, but never saw any faces on them or anything" (27 year-old female athletic trainer).

Several subjects reported feeling some discomfort or noticing classmates that felt some discomfort around the cadavers during the more sensitive exams. The body parts listed by subjects as more sensitive included eyeballs, genitalia, faces, and the skull cap, which must be cut with saws.

"The face was little- I remember the first time seeming pretty strange the first time you cut into a face. It's a bit more personal, and the skin is different and the muscles are right there, so it is a little bit different feeling- it's difficult to describe, but a little more personal than the others" (28 year-old internal medicine resident).

The majority of the respondents reported that even though the experiences in the cadaver laboratory could sometimes be "surreal," intense," or "gruesome," most of the members of the classes grew to become comfortable with the class in general, and to develop a routine that seemed less bizarre as the semester went on. Some students took less time and some took more.

When asked if the more sensitive areas of the body were more difficult to dissect, the surgeon of the group responded, “No. Maybe for like five seconds” (29 year-old surgery resident).

#### 6. Crass humor around the cadavers

Did you or others make jokes or crass humor about the cadavers or their body parts?

Crass humor was reported by sixty percent of the subjects. One described this type of blowing of steam as “unavoidable” (27 year-old emergent care resident). One subject indicated that students in her lab would occasionally pick up disarticulated limbs and tap people on the shoulder with them or some similar type of play. Several subjects indicated that jokes were most common during the awkward discussions about and dissections of genitalia.

“I mean we had one- wow this is a really horrible gross anatomy story- we had one cadaver that an early generation penile prosthesis- and they were actually kind of air pumps. And so they work just like Nike shoes- you pump them up and the penis pumps up too. So this patient- the first day of gross anatomy you sort of get to know your cadaver- you know they don’t want to dive into anything- they want to make sure everybody’s gonna be OK, so the first day is like examining your cadaver- you know skin and everything. And the first thing this group noticed was that the patient had three testicles, and one of them was square. And so, finally, some brave soul reached out and gave it a good grab, and sure enough- it still worked. Unfortunately, the release mechanism of that was in the testicle, which had hardened, because a lot of the soft tissue hardens after death, and so by the end of the day, I mean, he was full tilt- and it wouldn’t go down. This guy- every day you wet a sheet and you put it over the cadaver, right? It was really awkward....and it stayed there until it was dissected out” (28 year-old female internal medicine resident).

Cadaver stories abound in the dissection laboratory, and there often exist legendary stories passed down from class to class about amazing pranks pulled on deans or professors or fellow students that involve cadaver dissection. Stories involving sitting cadavers upright in desk chairs, dressing them in normal clothing, or posing them in some way for photographs or



practical jokes are common. Articles and books have been written on the subject. While most of the subjects were familiar with such medical school lore, ninety percent reported never witnessing any type of humorous joke using cadavers during their time in school. The majority indicated that there were no known “trouble makers” and that everyone treated the bodies as learning tools and acted maturely and professionally. One subject did recall a practical joke played on a fellow student:

“Actually I can think of a very specific one. Oh man, if I say this...well there was this cadaver, and we had been dissecting the aorta, and all the viscera, and they had taken like a Wendy’s hamburger wrapper, and crumbled it up and put it in the stomach, and they did this before everybody was actually in the lab, so when we dissected it, it made it look like the person had ingested a Wendy’s hamburger wrapper. Ridiculous. It was hilarious at the time, but... I think they somehow inserted it in from behind, and then the students dissected from the anterior side, and they found it, so then it was a rumor around the dissection lab, because you knew the cause of death of the patient, and in the case the cause of death was dementia, and so then everybody thought, oh, this makes sense, this person had dementia, and ate the wrapper. It just floated around until the joke was up. It was pretty humorous” (29 year-old medical pediatrics resident)

#### 7. Funeral services for families of those who donate.

Did you imagine personalities or life circumstances for cadavers? Attend any type of memorial service for them?

When asked about imagining life circumstances for the cadavers, fifty percent indicated no real interest or discussion about social circumstances or health history. The other fifty percent indicated a focus on the health history of the person as told by the physical evidence of the cadaver, rather than the social life of the person behind the cadaver. The most common example mentioned by the subjects is the inspection of the lungs and the discussion about the differences between a smoker’s lung and a non-smoker’s lung that invariably accompanies that assignment.

Many of the subjects were not told of the causes of death of the cadavers, and they were encouraged to investigate the bodies for signs of diseases or trauma or other indicators of potential causes of death. “You learn about pathology, and what pathologists do, and so you are thinking about that when you’re dissecting, for example, in a patient that has died, we can’t tell- as soon as someone dies, their blood glucose drops to nothing. We can’t tell if their death was precipitated by a low blood sugar. But the vitreous humor of the eyeball will have the same glucose level as the body- and that’s preserved, so you know that you can take a sample from somebody’s eyeball and see their blood glucose. Learning that stuff makes it much easier...” (28 year-old female internal medicine resident).

Only twenty percent indicated imagining social circumstances for the cadavers, in addition to health history. “At least for me, it wasn’t sensitive like uncomfortable, but the one woman we worked on, she had her fingernails manicured, and her toenails were painted, and that was one of the first things that kind of gave her human characteristics...that kind of made me reach out a little more, to see her sitting in a beauty shop, getting her nails done...that was more...I guess sensitive for me” (27 year-old athletic trainer).

Natural anatomical variation seems to prompt discussion about how the person lived life and the amount of exercise and type of food consumed. Additionally, there are practical concerns for the dissection class as well: “A little bit- especially when we got to the internal organs, and we would find a smoker’s lung- so we pictured him at the bars a lot, drinking and smoking- Big Joe was our star football player- we thought of him as a tough guy- he had a lot more developed musculature. We always hoped the difficult structures would be tagged on Big Joe. Everything was bigger” (27 year-old female athletic trainer).

The idea of a memorial service for the cadavers was met with a wide variety of responses. Only twenty percent remembered there being any type of service. One subject chose not to attend the service. One subject did attend the service and was under the impression that all the student voluntarily attended. When asked if attending the memorial service was an important part of processing the cadaver dissection experience, she replied, “No. Not to me. I felt like it was important to the families that donated the cadaver, so obviously we all went. For me personally, you don’t identify the families or anything like that, we just wanted to show them that we are grateful and appreciative and all that- but it wasn’t like I needed closure or anything like that” (28 year-old female internal medicine resident).

#### 8. Dissection competence vs. clinical competence.

Do you feel competent to dissect cadavers? To treat living patients?

While several of the subjects qualified their responses by saying they would be comfortable dissecting cadavers with a guide, or a refresher, or assistance, etc., only one indicated that he would not feel comfortable at all, and he said he doubted that he ever was competent to dissect. The rest felt that the experience qualified them to dissect comfortable, given appropriate resources. “Let’s put it this way...I would feel completely comfortable dissecting a cadaver. Now, if you were to ask me to perform a surgery on a cadaver, or to go back and work on it....no obviously I wouldn’t be able to do that, like if you tell me now to go and pretend like I’m going to do an exploratory laparotomy on this cadaver, or go find the inguinal nerve, then no, I have no idea, but if I read the book and went through it, then yeah I’m confident

I could figure it out. I would feel comfortable working with a cadaver, but I don't remember all the anatomy I learned, that's for sure. I don't know much about below the neck" (29 year-old male surgery resident).

Several of the subjects were involved in programs that included the continued use of cadavers for surgical practice. "Last time I did was last year, and I will again next year. You use them as like a surgical dry run, to practice a procedure. You practice a sinus surgery or a parotidectomy or something. Temporal bones- we do that all the time. T-bone labs. The ethics of the decision, you know, a practice surgery first on a cadaver is better than just starting a living patient- its much safer" (27 year-old male emergent care intern). This use of cadavers as "practice patients" for surgical procedures can be considered an intermediary step between cadaver dissection and treating living patients, although the focus is on procedure and anatomy, rather than emotional or social components of health and illness.

Those subjects that have not continued to use cadavers as a learning tool, and do not do surgical procedures, often appreciated the anatomical knowledge, but did not glean as much from the process of dissection as did those that now perform procedures.

"I would feel OK diving in and getting going, but I would definitely need instruction, and somebody there to guide me through it. I felt like, for me, the act of dissecting wasn't as helpful in the learning process, you know, just the process of dissecting through the layers or whatever. But once you had it all dissected out, and you could see the structures you needed to learn, that was when it became helpful" (29 year-old medical pediatrics resident).

## 9. Transitioning to living patients.

Did your medical school specifically address the transition of skills from cadavers to living patients?

Most subjects reported very little or no mention of transferring anatomical knowledge to the treatment of living patients. “There was limited amount of combination in trying to associate anatomical features with a disease process....like if we would come across someone that had an abdominal aorta aneurism, we would discuss it briefly, but and then there was something like in memorizing the wrist bones, you had to know which one was the most commonly fractured...or the anatomical snuff box was important, although I don’t remember why now. Little tidbits...but rare. Maybe five percent of what was learned but it was never tested. What was tested was does this artery go above or below the nerve” (29 year-old male surgical resident).

For most, the emphasis was on using cadavers to prepare them for further medical education, not too prepare them to treat patients. Most subjects reported that discussions of ethics were included as part of the course, although rarely part of the examinations “I think the things they told us about treating the body, those things all go under the idea of being ethical, and that’s an important part of being a physician. That was like a first encounter in how to behave ethically and respectfully, and to think about the body as a person, not just a thing” (29 year-old female medical pediatrics resident).

#### 10. Positive and negative aspects of cadaver dissection programs.

Do you think cadaver dissection was beneficial for learning anatomy? Essential? Was it a positive or negative experience overall? Do you think you could get the same level of instruction through virtual dissection programs?

One hundred percent of the subjects described the overall experience as positive, in that it was beneficial for learning anatomy. While all described a certain level of stress due to the

workload of the course, only one said that he hated it, and he agreed that in spite of his feelings, the course was essential for learning anatomy, and valuable for his career in medicine. “I do think it was. Whatever I thought at the time, which was that it was horrible, I think it really was helpful to get a good baseline view of how the body looks in general. I forgot most of that already, but it was very valuable back then” (28 year-old male anesthesiology resident).

Ninety percent of the subjects indicated that the cadavers were essential to the learning of anatomy. “I think hands down they are valuable. No question in my mind about that. I don’t think that you could learn the anatomy without it, in real life. Learning it from a text book is impossible, I think” (29 year-old female medical pediatrics resident). One subject had a unique perspective on cadaver dissection, and believed that virtual dissection could easily replace the use of actual cadavers. As a fellow, he was partially in charge of balancing the departmental budget, and was acutely aware of the expenses associated with cadaver dissection programs. No other subject raised the topic of cost to the institution. When asked if anatomy could be taught without the use of cadavers, instead relying on virtual dissection programs and plastic models, he said,

“Absolutely. Absolutely. Yep. I think it’s an incredible amount of money to invest for not a lot of gain, to be honest with you. It’s a lot of money. And I probably look at it a different way, but I mean, it’s thousands of dollars to do this type of work. You know the bodies....they were ten or fifteen thousand dollars, and then the staff, and the cost of disposing of the formaldehyde....that’s a lot of money” (41 year-old male pulmonary critical care fellow).

Several subjects indicated that the opportunity to touch the cadavers with their own hands gave them a better way to gain a sense of the tissues of the body. “Getting our hands on a cadaver, and actually seeing first-hand what’s under the skin and what’s under the fat, really

getting down into the layers of muscles and tendons and bones, gave me such an appreciation for what we needed to know” (27 year-old athletic trainer).

Additionally, several noted that the emotional connection was a valuable part of the learning experience. When asked if the anatomy could be learned without the use of cadavers, one subject responded,

“I would not want to. I mean, that experience is so intense, and so profound, that it stays with you the rest of your life. You know, like to know one person so intimately, like I dissected every inch of this patient. From top of head to toenails. And to have that depth of knowledge, is I think crucial. And it teaches you a lot of life lessons, you know? Like, it’s tedious, especially if it’s an obese cadaver, you spend a lot of time skinning a cadaver, and it’s boring, you know. So you learn...you know you are at that stage of your life where you don’t think it’s a bizarre, obscene experience, you just think it’s a great experience” (28 year-old internal medicine resident).

## Discussion

Arlie Russell Hochschild studied flight attendants and bill collectors as subjects representing many professions that involve some form of emotional labor. According to Hochschild, emotional labor “requires one to induce or suppress feeling in order to sustain the outward countenance that produces the proper state of mind in others--in this case, the sense of being cared for in a convivial and safe place. This kind of labor calls for a coordination of mind and feeling, and it sometimes draws on a source of self that we honor as deep and integral to our roots” (1983, p 7). She then described the inherent danger of such a line of work: the possibility that the worker becomes “estranged or alienated from an aspect of self- either the body or the margins of the soul- that is used to do work” (1983, p 7).

Hochschild estimates that one-third of all American workers must rely on some form of emotional labor as part of their job requirement, and among women workers she believes that number to go up to one-half (1983). “As traditionally more accomplished managers of feeling in private life, women more than men have put emotional labor on the market, and they know more about it’s personal costs” (Hochschild 1983, p 11). Hochschild defines emotions and feelings as a sense, similar to hearing or smell, in which things perceived through the bodily senses are juxtaposed or combined with imagination. Citing Sigmund Freud, she believes feelings have a “signal function--” a communication to ourselves about our view of the world. And yet these feeling can be altered and manipulated, as seen in such common sentiments as “I should have been more upset” or “I tried to like her more.” For Hochschild, even the act of trying to get in touch with one’s feelings is a form of managing those feelings. “In managing feeling, we contribute to the creation of it” (Hochschild 1983, p 18).



Furthermore, Hochschild demonstrated that emotion management is not limited to the private domain; rather, it is utilized in daily exchanges in the form of social currency (1983). These exchanges follow “feeling rules,” which govern which parties owe which amounts of social currency to whom. Some of these relations are inherently unequal in power and authority, and thus the managing acts are unequal. These class, gender, age, and other differences all contribute to the role of the actors in the relationship. The feeling rules governing the interactions of private life are established through social negotiation and are often subject to change or termination (Hochschild 1983). In contrast, the feeling rules of institutions are printed in manuals, standardized, and “ritually sealed.” Hochschild calls this conversion of private sector skills to commercial commodity transmutation (1983).

For Hochschild, transmutation of emotional systems from private to professional realms is accomplished differently by men and by women, and according to hierarchies of class and power. Similarly, the associated dangers and the inherent costs of such repeated behavior are more and less severe along class and gender lines (Hochschild 1983). Women are more often given the job (or at least they perceive that they are given the job) of creating and maintaining the appropriate social tone for the situation (Hochschild 1983).

The cost of emotion work is that it “affects the degree to which we listen to feeling and sometimes our very capacity to feel” (Hochschild 1983, p 21). Hochschild believes that people in the post-industrial world are far less likely than our predecessors to live in an isolated, unchallenged paradigm, but are rather more fluid, mobile, connected, and exposed to other world-views, opinions, and sets of feeling rules. This leads modern humans to be more inclined to ask “Who am I?” and “What should I be feeling?” This post-modern doubt and the lack of

central identity make it even more important for modern humans to pay attention to emotions as signals for how we are reacting to the world. At a time when we are in need of clearer signals from our feeling selves, it may be particularly dangerous to commercially distort the managed heart (Hochschild 1983).

All too commonly, Western physicians tend to view emotion as dangerous- in that it alters perception and results in irrational behavior (Hochschild 1983). Medical institutions emphasize and promote rational objectivity in study and practice of health care. But Hochschild warns that “a person totally without emotion has no warning system, no guidelines to the self-relevance of a sight, a memory, or a fantasy. Like one who cannot feel and touches fire, an emotionless person suffers a sense of arbitrariness, which from the point of view of his or her self interests is irrational. In fact, emotion is a potential avenue to “the reasonable view.” Furthermore, it can tell us about a way of seeing” (Hochschild 1983, p 30). The danger faced by the student physician is the emotional disconnection from self during the acquisition of “the medical gaze” described by Byron and Mary-Jo DelVecchio Good.

Hochschild distinguishes between “surface acting,” in which service workers deceive their clients about their emotional state- they put on a smile or frown, and “deep acting,” in which workers deceive themselves about their emotional state (1983). Hochschild includes physicians and nurses as workers who must achieve deep acting. With regard to cadavers, the deep acting is of course not for clients but for peers, while the later interactions with living patients may include tactics of surface acting, particularly the careful management of uncertainty (Hafferty 1988). Within the cadaver dissection laboratory, however, the majority of the

emotional management involves “deep acting,” through which medical students reformulate their identities within the context of their careers.

Institutions of medical education have become increasingly sophisticated in their ability to manipulate the imagination of subjects and to guide them in how to feel (Hochschild 1983). Lief and Fox give the example of the teaching hospital preparing for the students’ first experience of an autopsy. The scene is set beforehand to minimize the shock of the cadaver’s more sensitive parts: the faces, the genitalia, the hands. These regions are not dissected. The professional demeanor of the dissector, along with the other manipulations of the setting and scene, contribute to the students’ ability to interpret the experience scientifically and intellectually instead of emotionally. Lief and Fox specifically note that “whereas in laboratory dissection humor appears to be a widespread and effective emotional control device, it is absent in the autopsy room, perhaps because the death has been too recent and [humor] would appear too insensitive” (Lief and Fox 1963, p 55)

According to Hochschild, the steps taken by those in many medical communities to set the stage and manipulate the environment are meant to reinforce meaning. “Covering the corpse’s face and genitalia, avoiding the hands, later removing the body, moving fast, using white uniforms, and talking in uniformed talk- these are customs designed to manage the human feeling that threatens order” (Hochschild 1983, p 50). She goes on to describe the waiting room as another locus of manipulation for emotional effect, often containing photographs or portraits of those to whom the subjects are encouraged to give respect and admiration. Another example is the practice of hanging diplomas on office walls, and in maintaining a clean and orderly waiting room (Hochschild 1983).

Hochschild further distinguishes among multiple responses to the stress of managing emotions. Two involve a clear ability to distinguish the separation of self from worker role and result in a potential risk of seeming phony or robot-like as the put on their show- which sound very much like the results of surface acting (1983). In contrast, some workers identify too closely with the work, unable to separate their personal selves and their worker selves, and these run the risk of burn out. Unable to depersonalize work situations, they suffer unbearably from anger and hurt. The result is a risk of emotional numbness (Hochschild 1983). It is this approach that most resembles the typical medical student approach to medical training. Because it is so all-consuming, and because identity formation is such a huge part of the medical school and cadaver dissection experience, the students often combine and fuse their personal selves and their worker selves, leading to emotional numbness and aloof detachment from coworkers and patients.

The concept of emotion is enveloped in assumptions particular to the Western world, according to Catherine Lutz (1986). She asserts that the cultural constructs of emotion are part of a system of power relations, gender and identity formation, and determination of mental health (Lutz 1986). She demonstrates the Western construct of creating dichotomies, first to pit emotion against thought. While emotion connotes raw energy, passion, irrationality, subjectivity and chaos; thought implies information, reason, rationality, objectivity, and order (Lutz 1986). The emphasis physicians place on objectivity as a positive quality imply that subjectivity, and therefore emotions, are negative.

Additionally, emotion is placed opposite estrangement in a dichotomy inherent in Western philosophy (Lutz 1986). In this comparison, emotion connotes attachment, community,

involvement, relationships, nature, commitment, and value. The opposite of emotion is then estrangement, alienation, individuality, culture, and nihilism (Lutz 1986). In this construct we also see the female versus the male. With the gendering of these concepts, the irrational but connected female is contrasted with the objective yet aloof male.

For Lutz, these emotions are socially constructed and mediated, although they are played out within (or upon) the individual (1986). She demonstrates that emotional paradigms differ from cultural group to group, and that class, race, and gender dictate appropriate emotional affect for given situations. Individuals then cultivate those emotions, and perform the affect necessary to communicate the appropriate emotions to onlookers (1986).

Emotion has been a tricky subject to study for several reasons. It is a concept so basic to the Western mind that it resists analysis. Within the Western anthropological approach, there are limitation to our “vocabularies of emotions,” according to Morgot Lyon (1993). She illustrates how the cultural constructionist approach typical of anthropological study is limiting with regards to the study of emotions (1993). For Lyon, emotion is more than just a domain of cultural conception, and cannot be reduced to a symbolic expression mediated by culture. She distinguished between emotions and more abstract, symbolic constructs such a self and person (Lyon 1993).

Even within the history of just the Western worlds, the concept of emotion has undergone transformations (Reddy 2001). Using the French Revolution as a case study, William Reddy explores links between emotion and cognition and between cultural behavior and emotional expression. He illustrates that while the cultural constructs surrounding emotions have evolved over time and throughout history, emotions facilitate and constrain behavior (Reddy 2001).

In “The Shame of Headhunters and the Autonomy of Self,” Michelle Rosaldo describes the world of the Ilongots, a horticultural group from the Philippines, to analyze the concepts of guilt and shame. While the West often views these as necessary evils, which serve to contain those impulses which would be socially or morally unacceptable, this view is situated in the ruggedly individualistic approach to self that characterizes the Western ego. Other cultural groups conceptualize these emotions differently (Rosaldo 1983).

While in some non-Western societies the concept of identity can be more fluid and duplicitous, typically in the West the concept of identity is less flexible, as noted in Dorinne Kondo’s description of Japanese factory culture. She found that this distinctly non-Western approach to self allowed for an identity that was flexible and often self contradictory (Kondo 1986). She demonstrated that power relations and gender play a key role in the formation of identity.

Recent research has focused on the bodily aspects of emotion. Saba Mahmood expanded on Bourdieu’s ideas about habitus to take on the concepts of spontaneity and discipline. In her studies on Muslim women in Cairo, she illustrated that spontaneous acts of emotional affect are not spontaneous at all, but rather are rehearsed and performed via physical practice and discipline (2004). She describes a process whereby the ritualized repetition of bodily aspect precedes the associated emotional states. Rather than the physical body reflecting the emotional state within, Mahmood reveals a cultural paradigm in which a disciplined bodily affect produces and reinforces desired emotional states (2004). Whereas in the West one might interpret the smiles of another to mean they are happy, among some groups it may actually mean that the

subject is trying to cultivate happiness within herself. These bodily affects, like so much else, are mediated by social categories of class, race, and gender.

Robert Desjarlais has investigated the bodily aspect of emotional affect, and demonstrates in his study of Nepalese shamans that humans perform physical affect in directed ways. He reveals that the social archetypes of class, race, and gender proscribe and limit the emotional physicality of individuals (1992). The social categories of class, race, and gender provide a framework with which people interpret, define, and respond to the world around them.

These broad social categories constrain and direct nearly all facets of cultural behavior and belief. The realm of Western medicine, and in particular, the cadaver dissection laboratory, are no different. The experiences of people from diverse backgrounds continue to differ in health care, although perhaps not to the extent that they did in the past. The field, like most in society, has undergone radical changes during its history. “To understand the cautious respect for the dead that pervades the modern anatomy lab, it helps to understand the extreme lack of it that pervades the field’s history. Few sciences are as rooted in shame, infamy, and bad PR as human anatomy (Roach 2003, p. 39).

The physician-patient relationship has for most of the history of Western medicine been a relationship largely unequal for most people assuming the role of patient. While there is certainly the distinction in medical knowledge, there often has also been a distinction of class (Wear 1997). Physicians are usually afforded high social status, and are financially compensated well above the national working-class average. In part due to the fact that practicing medicine has in the past been a profession largely limited to middle or upper class white men, the system continues to reflect “...middle-class Western values: Patients should show appropriate deference

to the physician's knowledge; they should be neat, clean, and punctual; and they should be willing to disclose very personal things about themselves. Patients who do not reflect this conception are difficult patients or "poor historians" (Wear 2003, p. 76). Wear goes on to cite authors illustrating that working-class patients are less likely to take verbal initiative with their doctors, or to disagree with them (Waitzkin in Wear 2003).

Class difference have been closely tied to those of race and gender. John Harley Warner and James M. Edmonson collected over a hundred photographs from American medical schools between the years 1880-1930 (2009). These photographs depict the then-popular trend of medical students taking posed photographs with the cadavers they just dissected at the end of a semester or year of anatomy class. They serve as a pictorial review of the changing trends and values of health care in the United States. Very few female or minority faces look out from the glossy pages of the book. There are a few all-female or all-black pictures from segregated schools, but the majority of the non-white faces were those of dieners- the mostly black men that prepared and disposed of the bodies (Warner and Edmonson, 2003).

Additionally, the mostly white male students often dissected cadavers that were obtained under much less rigorous regulations than those we have today. The history of cadaver dissection, even until the early twentieth century, is rife with illegal and immoral acquisition of cadavers, very often of poor minorities (Roach 2009, Moore and Dalley 1999). Thus much of the history of medical education involved mostly white students dissecting mostly black cadavers.

Most of the dissectors in the photographs wore street clothes. None wore gloves. "...we may shake our patients' hands and touch their skin, but the tactile sensation of muscle, brain and



viscera, living or not, is one we no longer know” (Warner and Edmonson 2003). Many of the students had tobacco pipes in hand in the pictures- smoking during dissection helped alleviate the noxious fumes. While the modern dissection laboratory looks and smells far differently from those in the past, legacies of inequality based on class, race, and gender persist in the system.

As Hochschild has demonstrated, the association of the feminine with subjectivity, emotional engagement, and chaos is present within Western medical communities. In a realm that emphasizes objectivity and detachment, the system rewards typically “masculine” behavior and punishes perceived “feminine” behavior (1983). Hafferty specifically address this issue when interviewing medical students for his research and heard some very telling statements, all three from male students: “It’s all in how you were raised. If you’re a guy, you learned pretty early in life to keep a stiff upper lip and not be a crybaby. Girls are raised differently. They never have to pretend to be tough. If they felt like crying, they cried. A guy couldn’t. (Hafferty 1947, p 141). Here we see the disaffected male- cut off from his emotional self. In another, we see the emotionally “cool” male in contrast with his emotional female counterparts: “I think girls have a tougher time in lab than the guys. You know, a role problem type of thing. They haven’t had all those years we had keeping feelings in check and learning how to be cool. As a result, a few of them go overboard and become super tough, but for the most part they are what you would expect, a lot more squeamish than the guys” (Hafferty 1947, p. 141). And finally, a male that praises the greater ability of the females around him to engage emotionally: “Looking around here you can see a lot of guys that missed the boat a long time ago. They never learned how to be in touch with their feelings. They weren’t allowed to know that sharing feelings with other people is a good and not a bad thing to do” (Hafferty 1947). In all these quotes, we can see

the legacy of gendered inequality surfacing in the perceived strengths and weaknesses of men and women. As Hochschild reiterates, women have far more experience in their personal lives in managing emotion than men, and are likely better positioned to transfer those skills into a professional environment.

## Analysis

Among Western medical schools, the practice of human cadaver dissection has been deeply embedded in the history of the medical discipline, and is a common component of the first two years of general study. Although it has been a controversial issue since its earliest credited use in medical training by Herophilos and Hippocrates in Greece in the 4<sup>th</sup> century BCE, dissection has persisted as a major component of the curriculum for anatomy and physiology classes in most institutions in the United States, Canada, and Europe since its reemergence in 17<sup>th</sup> century Europe. At that time cadavers were often illegally obtained through grave robbing and even murder, and Great Britain's Anatomy Act of 1832 set the international standard for rules governing the acquisition and dissection of human cadavers. Only unclaimed and donated bodies were eligible for dissection, and only people associated with scientific or medical institutions were authorized to dissect human cadavers (Moore and Dalley, 1999, p. 2). With access to human cadavers restricted, it became a symbol of elite achievement—only those accepted into medical schools had the right to dissect humans. In spite of occasional pressure from groups who view human cadaver dissection as unnecessary, medical institutions continue the practice, to teach not only anatomy and physiology, but to teach the proper management of emotion as well.

While most medical institutions promote dissection as the most comprehensive method for learning anatomy, Heidi Lempp's study of British medical students suggests that there exist seven specific "covert" learning outcomes as well. These advancements in knowledge (familiarization with the body, integration of theory and practice), skills (teamwork, application of practical skills, preparation for clinical work), and attitude (respect for the body, appreciation

of dissection within the context of the history of medicine) are part of a broader context of the ritual transformation of lay people into medical practitioners (Lempp, 2005, pp. 318-319). In medical education programs, especially through the processes of human cadaver dissection, students are taught to conceptualize the mind as separate from the body. Indoctrination of the separate mind and body is essential for acquiring fundamental elements of biomedicine, such as the ability to maintain a “professional distance” in the treatment of patients. In order to achieve these ends, students are subjected to rites of passage that serve to open them to new modes of thinking.

My research into the learning objectives of cadaver dissection sheds light on how those rites of passage serve to promote and produce specific qualities in Western physicians. Practical applications of the research include development and evaluation of the programming implemented by medical schools to address the transition students must make from working with cadavers to treating living patients. This transition is an important feature of medical education, and is often seen as the weak point in a system that often produces physicians that lack sensitivity to the cultural concerns of their patients.

Cadaver dissection is a rite of passage, similar in form and function to those seen in other cultural groups such as the Native American Vision Quest, in which boys on the verge of manhood are ritually transformed into adult members of a tribe. Arnold van Gennep described rites of passage as consisting of “three principal stages: separation of the participants from their preceding social status, a period of transition in which they have neither one status nor the other, and an integration phase in which they are absorbed into their new social state through various rituals of incorporation” (in Turner, 1967, pp. 288-289). For Victor Turner, the most salient

feature of rites of passage was the transitional state of liminality, during which a profound interior transformation takes place. “The arcane knowledge, or gnosis, obtained in the liminal period is felt to change the inmost nature of the neophyte, impressing him, as a seal impresses wax, with the characteristics of his new state. It is not a mere acquisition of knowledge, but a change in being” (Turner, 1967, pp. 238-239).

The first official event of medical education following acceptance into a program is the white coat ceremony. This rite of passage of American medical education sets the tone for the years to follow; it ritualistically strips away the individuality from the neophytes and dresses them all in identical white coats similar to those reserved for fully initiated physicians. Initiated members of the medical community typically address the issue of medical ethics and praise the incoming students for their success in gaining admission to medical school (Huber, 2003, pp. 364-366). The white coat ceremony serves as a small-scale example of the type of symbolic event that is part of the medical school experience.

All class members, regardless of study or profession prior to entrance into the program, take the same classes and the same exams. To compensate for differences in conceptual outlook and intellectual ability, rituals are used to reduce all participants to the same cognitive level, described by John McManus as stage one: thinking in either/or patterns of low cognitive complexity that do not allow for the consideration of options or alternate views. “Such retrogression in cognitive structure is a necessary precursor to the conceptual reorganization that accompanies true psychological transformation. In medical school, this ritual process of cognitive retrogression leads to the development by the initiates of a kind of tunnel vision in which gnosis of medicine becomes all-important” (Davis-Floyd, 1987, p. 297). The “gnosis”

instilled in neophytes through acts of ritual consists of values and paradigms consistent with the belief system into which he or she is being initiated. Ensuring maximum absorption of these essential elements, those conducting the rituals use a combination of mental and physical hardships to deconstruct the previous belief system of the initiate. This leaves the liminal character profoundly receptive to the construction of new ways to perceive and interpret the world and his or her relationship to it (Turner, 1979, pp. 239-242).

Fundamental aspects of ritual are critical in this process. According to Robbie Davis-Floyd (1987), these include:

“...an underlying cognitive matrix, the use of symbols to communicate messages emergent from the matrix, retrogression of participants to a lower level of cognitive functioning to ensure unquestioning acceptance of these messages, and extreme redundancy combined with heightened affectivity to facilitate this acceptance” (p. 289).

The cumulative effect of these characteristics of rite-of-passage rituals is a complete cognitive and conceptual reorganization of the individual.

For medical students, this cognitive and conceptual reorganization results in the production of physicians who are deeply bound into a framework of biomedicine. This framework is characterized by a view of patients as mindless bodies and an extreme dependence on technological intervention. Physicians are created to be mechanics, repairing bodies in the hospital or clinic as technicians would repair a car in an auto shop, and returning them to society to serve as vehicles.

Yet as Nancy Scheper-Hughes and Margaret Lock (1987) argued in their discussion of the mindful body, “the constituent parts of the body- mind, matter, psyche, soul, self, etc.- and their relations to each other, and the ways in which the body is received and experienced in health and

sickness are, of course, highly variable” (p. 7). The separation of mind and body into the respective domains of theology and science focused clinical theory and medical practice on a soulless body. “The Cartesian legacy to clinical medicine and to the natural and social sciences is a rather mechanistic conception of the body and its functions, and a failure to conceptualize a mindful causation of somatic states” (Scheper-Hughes and Lock, 1987, p. 9).

Indeed it is only recently that researchers in Western medicine have made attempts to reconcile the body and the mind, and there seems to remain a Cartesian dichotomy even in this reunion. Kitty King Corbet demonstrated in 1986 that physicians, even while acknowledging the mind as a possible source of pain in a presenting patient, typically see pain as “*either physical or mental, biological or psycho-social- never both nor something not-quite-either*” (in Scheper-Hughes and Lock, 1987, p. 10).

Numerous researchers have revealed aspects of ritual in cadaver dissection. Among these are Lella and Pawluch (1988), who demonstrated that many students need time for personal reflection and access to counseling when involved in activities that violate deeply held social taboos and cause disturbing emotional reactions. Hafferty (1988) and Becker et al. (1961) identified jokes—often involving crass humor—as part of the cadaver laboratory culture and interpreted them as socialization techniques and coping strategies. Since students know nothing about cadavers except age and sometimes cause of death, cadavers initially have no names. Students frequently refer to cadavers by nicknames, which are often based on abnormal or anomalous characteristics. These studies clearly illustrate the emotional impacts of working closely with cadavers and students’ need to release tension in the form of lighthearted and comedic behavior.

First year students are introduced to human cadavers, which are among humanity's most potent symbols of mortality. They are then asked to dismantle the cadavers, and in doing so, they also deconstruct the concept of death. Cecil Helman illustrated that dismantling the body can symbolize the "taming of death" and at the same time bring about a sense of the deconstruction of what was human (Helman 1991, p. 118). This may be a symbolic representation that contributes to the biomedical construct of death not as a social event but as an ultimate failure of health management. Furthermore, according to Sinclair (1997), the dissection lab is the site of the initial hands-on experience for students, and a crucial step on the path leading from the lay person's role toward the status of medical practitioner, replete with the exclusive ability and right to cut into living human flesh. Only those in the liminal state between lay person and physician have access to dead bodies, and only those with the duly initiated status of physician have access to animated bodies.

Working with cadavers teaches medical students that the human body can be mechanically manipulated like any other object. Segel observed that "in the ritual of cadaver dissection, patients can be reified as objects that can be known and handled through technical routines and that the doctor learns to perform these routines with a professional distance" (Segel 1987, p. 319). Indeed, in addition to the use of intellectual overload to separate the neophyte from the person he or she was and from the people he or she will treat, cadaver dissection also separates the mind of the afflicted from the body to be treated.

Before learning to deal with living people as patients, the student-physician learns a conceptual distance from them, illustrated in the experience that LeBaron shared from his fieldwork with Harvard medical students:



“I held the slide up against the light again. Yes, that had once been someone’s finger. It had felt coffee cups, pieces of paper and buttons, scalded itself, shook hands, gestured in excitement, caressed faces. Now it lived between pieces of glass in a box. A small chill ran through me. “Strange,” I said, “Yeah, isn’t it? Here’s a piece of penis. A little later, you’ll get to a salivary gland from someone’s tongue.” I look at him, my eyes widening. Phil shrugged. “After a while, you just don’t think about it any more.” I started again, a little more slowly. If this was human flesh, however sliced, dried, or stained, I should at least show it the courtesy of adequate attention. Soon people began to leave for lunch. It was almost one, I was hungry, and another class started at one-thirty. I sped up: esophagus, testicle, intestine...Where are those crazy terminal bars they said I should see? The heck with them...I’m getting something to eat. You get used to things fast around here, I thought as I locked up the microscope” (LeBaron 1981, p. 40).

Concerns for the personal experiences of disease are lost in an onslaught of medical data to memorize. Students are assigned enormous quantities of homework and are left with very little time to contemplate the cultural aspects of the material they study. The effect is often a detachment from the cadavers, the slides of tissue, and perhaps the living patients that students begin to examine and treat in the clinical rotations of medical school.

From the first year of medical school onward, there is growing detachment from the diseases studied and from the people who have them, and this rapidly progresses to a cynical intellectual arrogance that is made possible only by such detachment (Davis-Floyd 1987, p. 304). In fact, because interaction with live patients is so rare for most first- and second-year medical students, the former are viewed as an unusual opportunity to see the words of medical education made flesh. And yet the disease victims are referred to as CPC’s, or clinical-pathological-correlations, indicating the conceptualization of treatment not of a person with a disease, but rather as a disease manifesting itself in the clinic instead of in its usual place in the texts (LeBaron 1981).

Repeated exposure to cadavers and the rituals of dissection play an integral role in the development of the attitudes and beliefs of those who are eventually initiated into the medical community. Throughout the three to ten years of residency, repetition of biomedical symbology continues, further ensuring continued unquestioning belief in “the one way” to do procedures. Student physicians and residents are taught routinized methods of treatment and expected to master them. These procedures are standardized and used to create a protocol for every potential medical situation, taking intuition and personal interaction out of the equation. Patients are left with very little ability to choose their course of treatment, and doctors simply follow protocol, regardless of the individual and personal needs of the changing patients. One division of Western medicine that has been routinized particularly thoroughly is Obstetrics, in which physicians treat expectant mothers and deliver babies.

In a study of obstetricians, Davis-Floyd (1987) noticed that the technologic model of birth, which imposes a conceptualization of the female body as inadequate to give “normal” birth without intervention with machinery, is so completely incorporated into Western medicine that obstetricians view themselves, rather than mothers, as the deliverers of babies (p. 306).

One obstetrician who does not share this view was asked to write down the primary characteristics of the residents emerging from the obstetrical program in his city in the Eastern United States and responded as follows:

“The residents I am seeing today are very consistent in their attitudes and philosophies about birth. That’s why I can’t find anyone to hire around here.

These are the characteristics they all seem to me to share:

1. It is always the patient’s fault
2. Aloofness
3. Heavy reliance on technology
4. General paternalistic approach
5. Disdain for paraprofessionals

6. Disdain for nutrition
7. No holism in approach, no consideration of emotional needs
8. Lack of respect for consequences of surgery-time is money in the super-doctor approach—"I can do anything"
9. Reverence for the "I'm in control" MD
10. Disdain for anyone who is willing to relinquish complete control- they can't understand why I have nurse-midwives doing "my" deliveries
11. Disdain for anyone who doesn't rely on technology" (Davis-Floyd, 1987, p 306).

The future of Western medicine may incorporate new views into the technologic biomedical model. There have already been dissenting voices within the medical community advocating a holistic and humanistic approach to concepts of health, illness, technology, birth, and death. Many physicians are increasingly exposed to alternative belief systems, often as part of the elective medical school curriculum. However, it will undoubtedly be a slow process of change, due to the extreme effectiveness of the ritual of medical school in producing biomedical physicians. An obstetrician commenting on the cognitive transformation that occurs among residents stated that:

"It doesn't seem to matter- male or female, young or old, wealthy or poor- it is only the most unusual individual who comes through a residency program as anything less than a technological clone. This rite of passage that you are talking about is an assembly line to the adoration of technology, no matter who starts at the beginning" (Davis-Floyd 1987: p. 309).

My experiences as a laboratory instructor for a course in human anatomy revealed general trends among students confronted with cadaver dissection. The course was taught to undergraduate students in pre-health programs other than pre-medicine. Most were pre-nursing students, with a smattering of students from pre-chiropractic, pre-occupational therapy, anatomical illustration, and other programs. They chose to take the dissection section, instead of one of the observation sections, so they all wanted to be there and were dedicated to staying in

the class. The vast majority expressed appreciation for the knowledge and experiences, yet still became comfortable enough to complain about the more gruesome aspects of the course.

For them the most exciting events included removing the brain, sawing the face in half and cracking the ribcage--which all involved the use of an electric bone saw. Each of the dissections was also by nature dramatic compared to skinning the fat and skin from the limbs or trunk, which was slow and tedious. The bone saw achieved quick and dramatic results: the opening up of new spaces of the body. These dissections also involved particularly potent odors that caused headaches. The bone saw also created a cloud of bone dust which irritated airways and eyes. These aspects of the more intense dissections received the most complaints about physical discomfort.

Emotional discomfort was evident in some students from time to time. Many felt that hands and fingers were potent reminders of the humanity of the cadavers, especially when seeing painted fingernails. The dissection that caused the most comments consistently from semester to semester was the bisection of the face, or sawing the face in half, right between the eyes. This required some work with an electric bone saw, but primarily required two people to use a long serrated blade to saw back and forth through the cadaver's face. This required significant force exerted from awkward angles, and included a lot of grinding and popping noises as the bone fragments broke, and clouds of bone dust. The experience is pretty intense, even for those that have done it before. , and students were typically expressive about their unease. Some students were reluctant to dissect genitalia, but this was a pretty small minority, mostly of men objecting to dissecting a male's reproductive organs.

I taught for three semesters as one of two teachers of two sections of the same course. My counterparts for the first two semesters trained me to some degree, although I had been through two anatomy courses involving anatomy dissection in the past. They primarily helped orient me to the anatomy program, the laboratory, and the structure of the course. But they also served as examples to me of how to teach cadaver dissection, in addition to the teachers I had had in the past. This time, however, I was not a student but an instructor, so my focus was different. Instead of mastering anatomy, I was merely refreshing my anatomical knowledge, and focusing my energies on creating a positive learning environment and minimizing fear, apprehension, and anxiety among the students. I was confronting these issues in a much more in-depth way than when I was a student, and I was contemplating the social and psychological aspects of a course in cadaver dissection.

During the first week of the first semester that I taught the course, I observed my teaching counterpart's morning section to help me get an idea of how to conduct my classroom for the afternoon section. I noticed her make many various attempts to bond with students and to foster a very friendly, laid-back classroom atmosphere. We shared a classroom and office, and saw each other in the lab between classes each day. Throughout the semester, I continued to see her go to extremes to make her students comfortable and enthusiastic about class. This included a multitude of baked goods, and a continuous invitation and encouragement for students to stay after class to have lunch and go over class material or just discuss social topics. Students were encouraged to bring baked goods that had some connection to anatomy- from pretzels and cookies in the shapes of various body parts or systems to cakes with diagrams of arteries and veins. During the week of Easter, she dressed in a bunny costume for class and handed out

Easter candy to students that could draw the brachial plexus- the nerve distribution of the arm- the quickest. Each day there would be music playing during dissection, and it became a common activity for students to make CD's and bring them in, or to use ipods to play music while dissecting. These aspects of the course alleviated a lot of the anxiety with which some students initially struggled, in large part because they were able to focus on something other than the task at hand at least a little bit.

Over the course of the three semesters that I taught the course, I noticed a high degree of social bonding among my own class sections and that of the other dissection sections. This is likely due to the small number of students (6-13), the length of the lab (2 hours 20 minutes), and the emotive content of the experiences. Humor was a consistent aspect of student behavior, ranging from the crass humor involving cadavers to stories about extraneous topics. Many students described test anxiety during the timed practical exams, which include twenty stations with three tagged structures at each. Students were allowed just two minutes per station to identify tagged structures or answer questions about them, and were not allowed to speak to one another. They noticed the absence of music during the first exam and requested turning it on to make the exam more comfortable. Quite a few students described having dreams about the cadavers-- most of them involving some degree of anxiety. None described having repetitive nightmares, but some did have recurring dreams involving their cadavers.

I spoke to the students on the first day about respect for the cadavers, but did not list many specific behaviors as taboo. I told them photographing cadaver tissue was not allowed, guests were not allowed in the lab, and to behave around the cadavers in a way that they would feel comfortable if the family of the deceased were present and witnessing it. The students had

no real problems with this. They did make off-color jokes that involved sexual innuendo during the lab sessions, but they did not involve the cadavers. They did give nicknames to the cadavers, but these were probably more functional than descriptive. One cadaver was referred to by students as Betty, and the other was simply The Dude. These were corruptions of my tendency to assign dissection positions by referring to them as the male and the female.

One semester the program acquired a very tall male with large musculature and he came to be called The Marine. This was clearly a small attempt to construct life circumstances for him- to try to place the physical object we were interacting with into a social environment to account for the nature of his physicality. We held no type of funeral service, although each semester the students expressed interest in an end of semester social get-together. One year, this took the form of a pot luck lunch organized by one student who handed out dissection awards--homemade necklaces in the shape of body organs personalized for each student and teacher. Awards included such titles as “Most likely to drop a scalpel on a foot” or “Most likely to perforate a kidney.” There was a sense that the students were attempting closure for the course, but it was more focused on the social bonding of the students and teachers and their impending separation than on emotional connections to cadavers. However, one of the reasons the students bonded so much in this particular course was due to the emotional reactions they had to cadavers and dissection.

The students were highly inquisitive, and asked me questions about a huge range of topics. Discussions often began with anatomical questions that would lead to such topics as the transition to bipedalism within human evolutionary history and its implications for modern human anatomy and physiology. The use of a four-legged body design to walk vertically on two

legs presents a multitude of weaknesses and problems that human evolution has had to address-- ligaments to bind the bones of the foot and stabilize the very weak ankle joints, curvatures of the spine, etc. Students had questions about processes and forces of evolutionary change, and in Kansas, these discussions never fail to take on a religious and political component. Those students from Western Kansas high schools often had vastly different science class experiences than students from high schools that did not edit out chapters on evolution with big “Just a Theory” stickers. Upon learning that I was a student of anthropology, questions about evolution came frequently.

Some students had questions about such topics as afterlife or the soul, which is fairly common. These questions usually came at a more intimate moment, when there were fewer people around. These discussions usually pop up when most students have quit for the day, and one or two has stayed late to finish up a task and there are just two or three people left around. I remember my first dissection teacher from undergraduate classes talking about the idea of the souls of the cadavers we were working on looking down and watching us and approving or disapproving of our work. “Do you think she knew when she signed up for this that we were gonna completely skin her face and cut her muscles out and break her bones and all this?” And the answer to that question, which I in turn fielded from my students year later, is “No. Most of these people that donate probably had no idea how gruesome some of these dissection are. If they knew it might change their minds. They probably preferred not to consider it too much. But who knows?” These questions were in part fueled by an anxiety over offending the cadavers, a discomfort with what they were doing to the person that once inhabited the body.



## Conclusion

Cadaver dissection can be viewed as a microcosm for the medical school experience. The rituals enacted in the dissection room are repeated in some form or another again and again throughout the remaining years of education and medical practice. Students are exposed to symbols that serve to promote and reinforce the characteristics of the technologic model, including the reification of patients as mechanical objects and clinical detachment. The ritual of cadaver dissection is but one of many that contributes to the production of Western biomedical physicians.

The results of this study confirm that student physicians do in fact typically react emotionally to cadaver dissection, especially on the first day of class, and that while the issue of respectful treatment of the cadaver is always addressed, the topic of emotional attachment is less frequently addressed. The incidences of “blowing off steam” or joking around to relieve stress indicate that students find ways to alleviate the emotional strain of cutting through human flesh. The typical medical school does not address this need other than to direct it away from the actual cadavers.

While the experience may be intense and surreal, students generally readily realize the value of cadaver dissection and are grateful for the opportunity to learn anatomy intimately. Most agree that virtual dissection could not replace the hands-on interaction with actual human tissue, and would lack the opportunity for emotional attachment that many students developed for their cadavers.

The student experiences I observed in my classroom confirmed the results of the formal study I conducted with physicians. When confronted with the gruesome rituals of human

cadaver dissection, students seek meaning in the trauma of breaking social taboos about bodily space and contact. They use narratives to construct and negotiate that meaning and achieve a type of social healing with their instructors, their class-mates, and their cadavers. They participate in and reproduce rituals of medical education, and in doing so, they slowly approach the medical gaze of the Western physician. They reconstitute the objects of their gaze: the medical knowledge they are obtaining, the diseases about which they are learning, and the patients they will eventually treat. They negotiate new identities and find ways to protect and manage themselves emotionally.

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## Appendix: Interview Transcripts

Subject 1: Ellen

R. When was the first time you dissected a cadaver?

E. It would have been my first year of grad school in the fall of 2005.

R. You would have been in undergrad?

E. I was in grad school

R. How many students were in your class

E. We had 15–16

R. How many cadavers?

E. Four

R. Did you rotate?

E. Indicated affirmative.

R. So you switched bodies that you were working on? Rather than work on the same cadaver each time?

E. Well that would have been nice since, because you move onto someone else's dissection. And it might not be completed all the way, and they might have botched the dissection and you're stuck that was one thing that would have been frustrating. We moved from cadaver to cadaver but we stayed with the same dissection group...I wanna say there would have been groups of four.

R. Was it usually a situation where all four were dissecting at the same time?

E. It might not have been all of us cutting at the same time but we would all had to be present for dissection to occur.

R. So one person on the manual or something like that?

E. indicates affirmative

R. Interesting, so within your classroom setting what qualities did your teacher convey that would be important to be a competent dissector?

E. We worked in conjunction with the physical therapy department, so you know we all dissected, and we all would take different areas and do those, so , we didn't do every dissection ourselves, it was a split project between the physical therapy, we shared our cadavers that way. But um, I think probably that one of the things that our instructors emphasized the most was maintaining professionalism in the cadaver lab. You know we were as grad students we had a little more experienced and life maturity under our belts than I would expect undergraduates would. I think that was one of the biggest things, just maintaining a level of professionalism, and separating, or at least trying to separate the emotional connection that you would have to a person and we looked at it more in terms of 'this is a cadaver, this is a ... it is a human body but this is not a human'... you know it is like dissecting a frog or a cat or any other kind of animal that you would come across in a regular biology lab. That was kind of the app... a thing that some of the students struggled with was that they have never done dissection before. I was a biology major in undergrad so I had done dissection on everything.....but human. You could see

in the group that some of us that had more of a science background were more comfortable using the tools and actually doing the cuts, whereas some people that hadn't had that preparation beforehand were more apprehensive about making cuts and they were really fearful of messing up or ruining something. But I think that the preparation– you know before we even brought the bodies out of the tanks we talked about how to use the tools and the types of tissues and the types of approaches you would use– you know we had to have our prep done before we ever did any cutting. So I think that was what prepared us the most, was knowing what we were doing and what we were looking for before we ever went in there.

R. Did you see any of your class mates or yourself react to the cadavers?

E. Yes, I remember the first time we brought the cadavers out of the tanks, and everyone gets a seat, and we were up against the wall, and our instructor spent a lot of time talking about, really, the emotional connection with the people and your approach to.....because like I said there were a lot of people that had no experience with any kind of dissection, let alone a human body dissection, so it was a good forty-five minute lecture and discussion that we had before we looked at the bodies.

R. Did they specifically address the issue of emotional connection?

E. Yes, and I remember him talking about the emotional part of it, and he said they there had been students in the past that had really struggled with getting past the point that this was someones' grandma, or brother....and he said he'd had students that had actually had nightmares about the cadavers in the past, so that was something that he really focused on.....for the most part our class was OK with it....I do remember a couple girls that were really skittish, you know, for the first couple classes they didn't want to get their hands on anything, they stood a couple feet back from the tank, and we had one girl, who– she said she had chemical sensitivity and so the formaldehyde would cause headaches and so she would put VIX on her nose and a bandana over her nose before coming into lab.

R. Did you ever notice dreams?

E. I did towards the end of the semester– it was weird. Because yo know, we gave them names....

R. Did you? What types of names?

E. Well one was named Annie, like the traditional Annie Are you OK? CPR victim...then we had one called big Joe or Big Bobby or something like that...he was nearly 300 pounds and it was all just subcutaneous fat– so gross. I think one of the other ones we just called grandma or something like that. But we had two females and two males. So I had dreams– never really nightmares. But I would dream about seeing these people in real life– but I could never see their faces. Because we kept those covered all the time, so I never had that true physical identification with them, so I would always



have dreams about them and I would know that they were the cadavers that we were working on, but never saw any faces on them or anything.

R. And you had that kind of dream more than once?

E. Maybe a couple times. It was pretty weird.

R. Did you ever refer to the cadaver as a sleeping or anesthetized patient?

E. Not that I can think of.

R. Did you dissect the face?

E. We did not. Just up to the neck and part of the jaw.

R. Were there any other particularly challenging dissections?

E. Not really. I remember there were a couple students that decided they wanted to look at the faces and so they did but the rest of us– me I was like no way I don't need to have faces with the bodies I'm already dreaming about. At least for me, it wasn't sensitive like uncomfortable, but the one woman we worked on, she had her fingernails manicured, and her toenails were painted, and that was one of the first things that kind of gave her human characteristics...that kind of made me reach out a little more, to see her sitting in a beauty shop, getting her nails done...that was more...I guess sensitive for me. You know, being a biology major, I had already been able to remove myself from, you know, the little kitty cat that we were tearing into, so I looked at it more as, this is a science lab, we come in here, we get our work done, and we get out. So I separated myself that way.

R. Just focusing on the work...

E. Yeah, and we started and by the time we got through most of the back and buttocks area, and once they got past the initial thought of 'we are cutting into what was a human,' they were fine and more like, 'let's see what else we can dive in and find.' But yeah, the fingernails and toenails got me a little.

R. Did they ever address the idea of translating the skills you learned on the cadavers to living patients?

E. In terms of...you know, for us, we don't do procedures, unless we are acting as a physician extender, and even then it would be doing injections or sutures or something....nothing surgical. But it was more about getting an appreciation for the human body, you know in our field, we don't have diagnostic tests, everything that we do is based upon the oral history, our palpation, and the special tests that we do, so understanding the musculoskeletal system, and how it works, and how the fibers lay over each other, and their orientation, that was our emphasis...what do the ligaments actually look like. So getting a grasp of anatomy and how it works. It's kinda like working from the inside out.

R. Did they address the issue of dealing with patients that have to disrobe?

E. Yeah, and back to your question about what qualities they emphasized....probably professionalism was completely, almost beat into you so hard, that laughing and having a sense of humor in the lab sometimes we were a little bit....oh gosh are we going too far? not being serious enough?

- R. Did ever notice any students crossing the line a little bit?
- E. I don't remember having any issues like that. We had the four cadavers, but then we also had knee and ankles prosections from years past. And sometimes they might grab an arm and make the fingers wave at someone, or whatever, but never with the intact bodies.
- R. Did you ever discover any implants or altered body parts?
- E. Not that I know of- we had a hip replacement on one, and an open-heart procedure had been done on one of them.
- R. And that was about the extent of anyone being casual with the cadavers....or exhibiting fear or anxiety?
- E. We usually did dissections early in the mornings, between five and nine am....and then we had classes after nine. So we would study for exams late at night, and sometimes then the students would be a little more leery of the cadaver room. You know it's dark, and there's not that many people around, and people we be a little freaked out. If you were the first person to get to the lab for the study group, you wouldn't go in until somebody else got there. Nobody really wanted to be alone in there. Although we had the other extreme, I guess. There was a guy that said he stayed there all night. We were all studying and everyone left to go home and sleep and when we come back early the next morning, he was still there and said he just went in a side classroom and slept on a desk, with the bodies still out and everything. And he seemed to have no problems. So we had the girl that couldn't get over the smell and the guy who was about ready to crawl in there with the cadavers. Two extremes.
- R. Interesting. Did you ever imagine personalities or life circumstances for the cadavers?
- E. A little bit- especially when we got to the internal organs, and we would find a smoker's lung- so we pictured him at the bars a lot, drinking and smoking- Big Joe was our star football player- we thought of him as a tough guy- he had a lot more developed musculature. We always hoped the difficult structures would be tagged on Big Joe. Everything was bigger.
- R. Do you still feel competent to dissect cadavers?
- E. I think so, yeah. I don't know if I would necessarily feel comfortable taking students into that setting, and having the time to prepare them. Some of the students I deal with have a hard enough time with living patients, I wonder if they could deal with cadaver dissection. But it would be great for them to learn the anatomy for sure. Getting our hands on a cadaver, and actually seeing first-hand what's under the skin and what's under the fat, really getting down into the layers of muscles and tendons and bones, gave me such an appreciation for what we needed to know.
- R. Do you think that you could get that same appreciation from a virtual program?

- E. I don't think so– so much of what we do is hands-on, a lot of manual therapy, a lot of palpation– so knowing what normal feels like– you just couldn't get that through some technology.
- R. Were you allowed to palpate during exams?
- E. No. We learned to feel the difference between veins and arteries and all, but we weren't allowed to feel them on the exams. They just made sure to tag things with the layers exposed enough to identify what it was.
- R. And that still plays a big role in what you do now?
- E. Oh yeah. I teach some therapy classes now, and if they don't really understand what fascia looks like and feels like under normal circumstances, then it's difficult to get them to be able to understand abnormalities.
- F. And then do you also practice on living patients?
- E. Yes– everything we do, we call them check offs, they establish their way of systematically approaching injuries or illnesses, what we do is usually have an upper level student be the patient for a lower level student, and we will say, this is what you've got, this is where you are point-tender, you will tell them they are positive when they get it right....
- R. Ok well that's really all I have for the questions...Any thing else you would like to add.
- E. I hope I was helpful. Did you get anything good?
- R. Yes! Thank you.

Subject 2: Angela. Internal medicine resident

I did medical school in Arkansas, which is a very traditional medical school, which does a very traditional– I think it was 6 months at gross anatomy course.

And was that the first time you encountered a cadaver?

I actually had a really bad experience with dissection in undergrad– I ended up becoming an ethics major because I am very much opposed to animal testing.

We did the frog dissection– vivisection– in my college, and I found it such a traumatic event that I actually quit that course and never did another animal dissection again. I was basically on the pre-med track, and took that course, and absolutely loathed it. I dropped out of the premed track to major in ethics, and loved my ethics major, and ended up very interested in the medical humanities, and ended up going to Oxford to study ethics, and that's where I decided to go to medical school again, and that's when I came back.

Do you remember the first day of anatomy class?

Oh absolutely! First a little background on our program– we knew going into it that all the cadavers in Arkansas are donated by Arkansas citizens...so there is a program that if there is a family that doesn't have any money for a funeral or funeral home, or any thing like that, they can actually go and say that they want to donate their body to science, and the government will pay for a nice funeral,

and the family comes to a memorial service at the end, so we knew that all of our bodies were donated to science.

And they got a funeral service at the end of the dissection?

I think the government gives them some money so that they can have a funeral when the person actually dies, and then afterwards, we have a medical school sponsored memorial service that all of the family members are invited to attend.

Do most of the students attend that?

Yes. All the students attend. It's voluntary, but everyone does.

Were you nervous on the first day?

I was pretty nervous. I was scared I would be nauseated or that I would find it really hard to cut a human, or that I wouldn't be good at it. You know, you realize that this is really a huge, huge deal, and you know, to have the opportunity to learn hands-on is a big opportunity, so you know those fears and thoughts, going into it. It's very nerve-racking the first day. And you know you're nervous about seeing them- you know, like a lot of students didn't want to look at their faces. That's kind of nerve wracking.

Did you keep the faces covered?

Yes. We pretty much kept the faces covered the entire time. Part of that was practical, because we were going to dissect the face, and so we want the face to be very well preserved, so we go to a lot of trouble to keep the face moist.

Did you find face dissections disturbing?

They were a little gruesome, but they were so fascinating because it's such a rich area- you know a back dissection is pretty boring, and an abdominal dissection can be extremely disgusting, because if someone is obese at all, it makes the dissection slippery and dangerous. It's really easy to cut yourself when your metal scalpel is cutting through fat that's partially liquified and the face is more delicate- it's an interesting dissection. Although the eyeball was pretty gruesome too. That was pretty strange. You learn about pathology, and what pathologists do, and so you are thinking about that when you're dissecting, for example, in a patient that has died, we can't tell- as soon as someone dies, their blood glucose drops to nothing. We can't tell if their death was precipitated by a low blood sugar. But the vitreous humor of the eyeball will have the same glucose level as the body- and that's preserved, so you know that you can take a sample from somebody's eyeball and see their blood glucose. Learning that stuff makes it much easier...

Did you try to figure out how the cadavers died? Or confirm the cause of death?

Yeah. And then at the end we find out.

Oh- so they purposefully kept the causes of death from you until the end so you could try to figure it out?

(indicates affirmative)

Did you find yourselves imagining life circumstances for the cadavers or for the conditions of their bodies?

The ones that were particularly interesting, we did. I mean we had one– wow this is a really horrible gross anatomy story– we had one cadaver that an early generation penile prosthesis– and they were actually kind of air pumps. And so they work just like Nike shoes– you pump them up and the penis pumps up too. So this patient– the first day of gross anatomy you sort of get to know your cadaver– you know they don’t want to dive into anything– they want to make sure everybody’s gonna be OK, so the first day is like examining your cadaver– you know skin and everything. And the first thing this group noticed was that the patient had three testicles, and one of them was square. And so, finally, some brave soul reached out and gave it a good grab, and sure enough– it still worked. Unfortunately, the release mechanism of that was in the testicle, which had hardened, because a lot of the soft tissue hardens after death, and so by the end of the day, I mean, he was full tilt– and it wouldn’t go down. This guy– every day you wet a sheet and you put it over the cadaver, right? It was really awkward....and it stayed there until it was dissected out.

Interesting.

But mostly the dissections are pretty complex, and it’s all job oriented work. You do your job and you are done, so you don’t spend a lot of time, you know, goofing off.

Did they specifically address the issue of respect of the cadavers?

Oh absolutely. I think we probably had an hour lecture before– you know disrespect is absolutely not tolerated, and if you did anything disrespectful, you would be asked to leave, and you would lose the opportunity to dissect a cadaver. That was vigorously addressed at my school.

What constituted disrespect? Did you nickname the cadavers?

We did. But they were never derogatory names– they were more affectionate.

You spend a lot of time with it, you feel weird calling it the cadaver. So you start to humanize it a bit....mine’s nickname was Bernie. From Weekend With Bernie.....Because we spent a lot of time with him. I don’t really remember the other ones– they were mostly just names– to call your cadaver something.

Did the names ever have anything to do with body parts?

I don’t think so. Everyone was afraid to nickname the penis pump cadaver, you know, people would joke around about that quite a bit...

Did you witness any other sort of crass humor– kind of borderline...

Well, you’ve got to have a sense of humor– I mean some of these dissections are really– I mean when you dissect the pelvis, you cut your cadaver in half here and here and you take the legs apart to dissect through the pelvis, and you have to clean out all the stool from the cadaver, and you get really dirty and it’s gross. So there’s an element of humor, but it’s never about the cadaver or about– I don’t know– my memories of gross anatomy are really positive– nobody every.....We just felt this was a great opportunity and we were profoundly grateful for the opportunity to do it.

Did you attend the memorial service at the end?

Yes.

Was that important for you?

No. Not to me. I felt like it was important to the families that donated the cadaver, so obviously we all went. For me personally, you don't identify the families or anything like that, we just wanted to show them that we are grateful and appreciative and all that– but it wasn't like I needed closure or anything like that.

So it didn't really address an emotional need for you?

A. No.

Was it difficult to initially desensitize yourself?

I think it took about a week– to quit feeling very, sort of disconcerted, to feel like– for it to normalize– to become a routine. Maybe a couple weeks.

Do you still use cadavers as learning tools after medical school?

I have a couple times since. Like the ortho people use them pretty frequently, so I went to an ortho forearm dissection, I would love to go to another, because I think it would be incredibly helpful for putting in lines, but medicine doesn't get those opportunities that regularly. You know we're not surgeons.

So you felt like it was an important part of the class?

I felt like it was absolutely an important part of medical school.

Do you think you could learn the anatomy without using the cadavers?

I would not want to. I mean, that experience is so intense, and so profound, that it stays with you the rest of your life. You know, like to know one person so intimately, like I dissected every inch of this patient. From top of head to toenails. And to have that depth of knowledge, is I think crucial. And it teaches you a lot of life lessons, you know? Like, it's tedious, especially if it's an obese cadaver, you spend a lot of time skinning a cadaver, and it's boring, you know. So you learn...you know you are at that stage of your life where you don't think it's a bizarre, obscene experience, you just think it's a great experience.

Thank you very much– I think you have addressed all my questions. Do you have anything else you would like to add?

Um.....I hope you publish this. Because I think people don't understand how important dissection is. I think everyone that goes through it has the same feelings I do, which is man that was wonderful– and that dissection is a great blessing to have for a medical school, and the people who don't get that don't have any idea what it's like, and so they don't value it as anything important. So I would like to see you published because I think most people just don't understand what it's like.

Subject 3. Nate. Surgical resident with the Army.

R. Where did you go to medical school and what are you doing now?

I went to Bucknell for undergraduate and University of Pittsburg for medical school and am currently a fourth year Ears Nose Throat surgical resident at

Tripler Army Medical Center and I'm on an away rotation here at KU for further head and neck surgery development.

When did you first dissect cadavers?

My first year of med school

Do you remember the first day you came in and saw the cadavers?

Yes.

What was that like?

It was a little surreal. They gave us a head's up and gave us a little mini-lecture about how to respect the dead but still realize that they are there for our benefit to learn, so um....it was weird seeing them all in bags and then once we opened it up and actually got the uh....like cadaver dissection going pretty good....it wasn't actually like you were working on a person, it was just another...just a body in anatomy, so it was very easy and very quick to detach from thinking of them as a person.

Was that specifically addressed by faculty or staff?

(indicates affirmative)

What did they say?

Well they encouraged us to respect the cadaver as a person that volunteered themselves, and to like not make jokes about it, or not to throw away any of the pieces or anything like that, but they never really taught you about how to dissociate yourself from it- that was just something that came naturally.

For you did you feel like it came naturally?

Did you notice students that struggled with it more than you did?

Most of the people by the end of the first class were fine with it. I would say everybody was pretty comfortable from the get-go. Nervous about what are we getting ourselves into. Because it was also our first class in med school. So there's this term called gunner...and most of Pittsburg were gunners...somebody that's really gonna strive to get a perfect score and be gung-ho, and so most of them were like ok i have to do this perfectly. A way to establish yourself as a gunner.....of which I was not.

Ah...so you sat in the back row?

No, I sat in the middle.

What other learning objectives were emphasized for the course?

They talked about making sure we identified vasculature and and the nerves, and we could kinda trash the veins...except for the IJ (internal jugular)....otherwise they told us go ahead and get rid of those...and the skin was not important...except for the face. We had a special way to dissect the face. In the face you had little sections you would remove, based on the.....subunits of the face, which I didn't understand very well then but now I get it a little bit better, where you would leave some of the tissue still attached so that you could see like the levels of musculature...the tendons and all that.

Was there an emphasis on procedure? Preparatory for a surgical career?

Not really. They didn't say much about how to use the instruments or what to use for dissecting, which kinda sucked, because most of the time I would end up cutting through something accidentally, so that would be useful. Most of the time I would be using some heavy-ass pick ups and a ten blade....

A ten blade saw?

We didn't do too much of the sawing...like to bisect the pelvis we didn't have to do that they did it for us.

Did you bisect the face?

The way they handled that, one or two of the bodies were designated for the sagittal cut, and the professor did that.

What was the primary goal of the course?

Learning anatomy.

Did they ever address the use of that knowledge in treating living patients?

There was limited amount of combination in trying to associate anatomical features with a disease process....like if we would come across someone that had an abdominal aorta aneurism, we would discuss it briefly, but and then there was something like in memorizing the wrist bones, you had to know which one was the most commonly fractured...or the anatomical snuff box was important, although I don't remember why now. Little tidbits...but rare. Maybe five percent of what was learned but it was never tested. What was tested was does this artery go above or below the nerve.

Did you ever notice students making crass jokes or....

Things that could be offensive? Yes. It was near the end of the semester when you were really comfortable around it. Just talking about how fat this person was or how disgusting this one smelled or something.

Did you give your cadavers nicknames?

No that was expressly forbidden.

Do you keep body parts not being used covered?

N. If you weren't working on the face, that was covered.

Any other body parts covered?

Genitalia. Breasts no. Those were pretty much...open.

Hands and feet?

Those weren't a big deal

Did you find dissecting those body regions particularly difficult or emotional?

No. Maybe for like five seconds.

Before the first dissection, were you nervous or more anticipatory?

I wasn't too worried about messing up the dissection- if we trashed it then hey they couldn't test on it.

Did you ever notice dreams about the cadavers or dissecting?

No. Do other people?

I have heard of that happening....

Like them coming to life or something?



Sometimes something like that maybe....Did you ever notice any students imagining life circumstances or personalities for the cadavers, or talking about them as if they were living anesthetized patients?

No. I think the closest thing to that I can think of is saying....that guy must have liked his steak or something like that....all clogged up with fat...or something like that.

Would you say that this course left you feeling confident in your ability to dissect a cadaver?

N. Without messing up? Uh.....

Or....

Let's put it this way...I would feel completely comfortable dissecting a cadaver.

Now, if you were to ask me to perform a surgery on a cadaver, or to go back and work on it....no obviously I wouldn't be able to do that, like if you tell me now to go and pretend like I'm going to do an exploratory laparotomy on this cadaver, or go find the inguinal nerve, then no, I have no idea, but if I read the book and went through it, then yeah I'm confident I could figure it out. I would feel comfortable working with a cadaver, but I don't remember all the anatomy I learned, that's for sure. I don't know much about below the neck.

Would you have been able to learn the anatomy successfully without the cadavers or were they an essential component of the course?

Without a doubt. I don't think you could do it otherwise.

Maybe with a virtual dissection or models....

Not the same. The only thing I think you can do virtually is....find it, since that's done endoscopically anyway....so you don't really look at it on the physical portion...anything that is endoscopic, you could probably do with a computer, but when you are actually going through tissue with tools...you can't reproduce that on a virtual. The cadavers are completely different from the pictures. It's a 3-D representation. It's interactive.

Were you allowed to touch the cadavers during exams to use texture as an indicator?

No we never did that. The texture was not very emphasized. But the hands on experience was. My recommendation would be that they teach you surgical technique along with the anatomy. How to use a scalpel. How to hold a scalpel. How to use a mosquito, or how to tease out the tissue from nerves without damaging them, and this would be difficult with the cadavers because they're stiff, but body positions for surgery.

So you really got over any qualms about cadaver dissection that first class?

Yeah maybe half way through the class.

Do you find in dealing with patients that you use those skills?

Kind of. I mean I don't think it's the same skills that you learned to dissociate yourself from working on a cadaver versus working on a person, but you definitely dissociate thinking of the person as having feelings. You think of them a lot as a disease, as opposed to.....you have to remind yourself that they

are a person. More so than you have to remind yourself of the disease. Nate, you're being a little bit too gruff with them, you need to slow down and explain to them that a trache tube is a....I brush by it and then they have a major problem getting a feeding tube and I have to explain to them that it 's temporary...

Something you would never have to explain to a cadaver.

N. Exactly

Subject 4- Allie

Do you remember your first experience with a cadaver?

At K-State, in Manhattan, Kansas as part of undergrad education.

And what are you doing now?

I am a resident in medical pediatrics- internal medicine and pediatrics. I went to medical school at KU- in Kansas City for the first two years and Wichita campus for the last two years. We did anatomy dissection lab in our first year.

Do you remember the first day of the first class?

Actually I do!

Can you tell me a little about that?

Well, you're definitely anxious, and I think that basically they just took us into the lab and they just brought up one body out of the bin and they kind of walked us through it, showing us how to operate the tanks, telling us what to do and not to do...

What did they tell you not to do?

I just remember to let the handles down easy so you don't let the bodies collapse. Um..just you know, respecting the body, not harming it, doing things that would be unethical....basically treat it like you would treat a family member if you were taking care of them.

Did they expand much on sort of the disrespectful behavior?

Yeah, they gave us specific examples, like don't just stick your scalpel in it, you know, make sure that when you're doing something, that you have purpose, just basically not defaming the body, not making crude comments, things that would be inappropriate, that you wouldn't feel comfortable saying to the person if they were there, or a family member if they were there.

Did you ever witness any students making crass comments?

You know, it may sound a little naive, but I think we were all pretty respectful of it, and we took it pretty seriously. I think at that time we all wanted to go to medical school, so we were highly motivated, high achievers, we wanted to do what was right.

What about later on in medical school?

I would say there was more crass comments that took. In general it was a respectful attitude, but I can think of a couple instances where there was a practical joke here or there- or things that happened.

Can you think of any examples?

Actually I can think of a very specific one. Oh man, if I say this...well there was this cadaver, and we had been dissecting the aorta, and all the viscera, and they had taken like a Wendy's hamburger wrapper, and crumbled it up and put it in the stomach, and they did this before everybody was actually in the lab, so when we dissected it, it made it look like the person had ingested a Wendy's hamburger wrapper. Ridiculous. It was hilarious at the time, but.....

So somebody just discovered the wrapper?

Yeah, I think they somehow inserted it in from behind, and then the students dissected from the anterior side, and they found it, so then it was a rumor around the dissection lab, because you knew the cause of death of the patient, and in the case the cause of death was dementia, and so then everybody thought, oh, this makes sense, this person had dementia, and ate the wrapper. It just floated around until the joke was up. It was pretty humorous.

So it was also sort of an opportunity to try to do a little forensic pathology? Exactly.

Did you find yourselves playing the game of trying to demonstrate cause of death or figure out life circumstances for your cadavers?

Yeah, I think that any time we were looking at things, and we would find something abnormal, you know, we would speculate on what happened, and try to make the connection between the anatomy and the physiology...I can't think specifically of life circumstances- except the Wendy's wrapper.

The very first day, were you nervous?

Yeah, you get nervous. I think I was more nervous the first day of anatomy in medical school, because you are expected to already know something about it if you've had dissection class in undergrad, so..

So for you was it more the academic pressure, since you had already worked with cadavers?

Yeah, it was the academic pressure. I wasn't all that nervous about seeing a dead body, you know the juice and the guts and everything, that didn't bother me that much.

It didn't gross you out or freak you out?

Not really. There were people that it did bother them, and occasionally someone would pass out or something, or get sick. I mean the smell, that would get to me, and kind of bother me. When I was done with the first year of medical school, I was glad to be done with the smell of the anatomy lab because I hated the smell of cadaver. I lived with my sister, and she hated it when I didn't change my clothes before coming home.

Did you ever notice dreams about the cadavers?

No, I can't say that I did.

Did you nickname the cadavers?

Yeah, I think some people did, and I think for some people, it made it more comfortable when they're...I can't remember if we named ours- we had a

group– but I think that people did, and it helped them get comfortable with the idea.

Did you cover some body parts?

We did. Anything we weren't using had to be kept moist, and a lot of times they have, I don't know what to call it....spare parts that they had saved and set aside. and that was definitely something that we had to take care of.

Did you keep faces covered?

Yes, but more to keep it moist than to avoid seeing it.

Did you dissect the faces?

Yes. It was hard– head and neck are just pretty difficult. Eyes....the intricacy.

Was there any emotional reaction to the face?

Maybe a little, but it wasn't really much of an issue for me...I don't know if I am insensitive or something.

did you notice other students express discomfort?

Yeah, I think there were some.

Would you feel competent to do dissection now?

I would feel OK diving in and getting going, but I would definitely need instruction, and somebody there to guide me through it. I felt like, for me, the act of dissecting wasn't as helpful in the learning process, you know, just the process of dissecting through the layers or whatever. But once you had it all dissected out, and you could see the structures you needed to learn, that was when it became helpful.

Do you think you could learn the anatomy with cadaver dissection? Were the cadavers valuable for learning anatomy?

I think hands down they are valuable. No question in my mind about that. I don't think that you could learn the anatomy without it, in real life. Learning it from a text book is impossible, I think.

Do you continue to use those skills today?

Yeah, I think so, I mean that's where you actually get your foundation in anatomy, and it's actually something that I am actually kind of weak on, and reviewing and relearning it would actually be kind of helpful for me. I think the people that really excelled at it are the people that end up doing surgery or radiology, and they really understand anatomy well.

Did you find it a challenge to transfer those skills to living patients?

No, I think the things they told us about treating the body, those things all go under the idea of being ethical, and that's an important part of being a physician. That was like a first encounter in how to behave ethically and respectfully, and to think about the body as a person, not just a thing.

Subject 5– Jess

Where did you go to school and what are you doing now?

I am in school now. I did my first two years in Lawrence, at KU, and then went to nursing school, and I'm now a senior and I will graduate in May.

And you have taken cadaver dissection?

Yes. And I have also taught it. To undergrad students. I took it as a freshman and taught it as a sophomore.

Can you remember the first day, when you saw the cadavers for the first time?

Oh my. I remember walking in and all I wanted to do was see the bodies, because that's all you hear about, and I think we didn't even see the bodies on the first day. We just kind of walked in and looked at bones or something. So the first time I actually saw the body, it was pretty bizarre, but at the time it was kind of exciting, because you get to work with actual human bodies, and I knew right then that I was going to get a lot out of the class.

So you had a prediction that it would be particularly valuable?

Oh yeah. As soon as I saw the lay out of the classroom, and got to know my TA's I knew I was going to get a lot out of the class for sure. It was laid back but at the same time professional, if that makes sense. It was a relaxed environment. I could tell that all the people involved in the course wanted to be there and were genuinely interested in the subject of anatomy.

Did you feel any fear or apprehension or notice it among your classmates?

Oh yeah. I didn't necessarily have any- I was just intrigued I guess, just to get the initial view of a cadaver, but there were definitely students that sort of stood back while others gloved up and got in there, but by the end of the course, pretty much everybody was comfortable.

Did instructors address that discomfort?

Yeah. I remember the course director came in and said it's normal to feel uncomfortable, and we will help make you feel more comfortable with it. Because he was the TA for my class, as well as the head honcho for the whole course.

Were there dissections that were more uncomfortable for you?

I would say the female and male anatomy parts, but um....no, by the time we all got to that point, we were pretty comfortable with the bodies, I think, at least I was. I mean each section you uncovered, it was something new, and so you would go in and kind of have- it's just something new every time, so I don't think there's any specific one that people were particularly affect by.

What did your instructors list as goals for the course?

To not just learn the parts, but also the bigger picture. This tendon is here, and it moves this part. They incorporated function. That was helpful too, especially if you were taking the lecture at the same time.

How did they address the idea of respect of the cadavers?

That was addressed, I remember on the very first day. They stressed, you know, these people donated their bodies to science, this isn't meant to be poking and prodding, this is meant to be a learning experience, so respect the bodies, no

pictures, no doing childish things, basically. Which is good– that needed to be said.

Did you see students crossing the line?

Nobody in my class, I mean no, not really. And as you get further in the course, you stop looking at them like dead human bodies, you just see them as learning tools, so I guess in that sense you might say disrespect started occurring, but no, I don't think so.

Did you ever have dreams about cadavers?

No, thank goodness. I never dreamed of creepy dead bodies. So yeah, I wouldn't like to go into that place by myself really. Too creepy.

Did you nickname the cadavers?

Yeah, I think we named each one, like Bob or something.

Did you notice students relieving stress with crass humor or playing with body parts or anything?

I don't....I know the course was stressful, but I don't remember any pranks or anything like that.

Did you see anyone invent personalities or life circumstances for them?

Not really, no.

Do you feel competent to dissect cadavers?

Yeah. But I was in the observation lab, we didn't dissect, just observe.

Ah so there was not a lot of focus on procedure.

No. Just learning the anatomy. I thought that would be better for nursing so that it would free me up to just learn the anatomy, not the cutting.

Would you say the cadavers were valuable for learning anatomy?

Oh yeah. That course has been the most useful course that I took in college, and I know a lot of students feel that way too. And not every school has a cadaver lab, so that's real life, you get to see.....even seeing like veins on someone's arm, I'm like I know what that looks like inside. So, I think it's very useful.

Do you think you could approach that level of learning with computer model and virtual dissection?

I definitely don't. I don't think you could really simulate a human body with a mannequin or computers or whatever.....I mean it's the real deal. In each body, you got to see that, well with a plastic model it's all perfectly laid out, but with a cadaver it's always different, and you were able to see the natural variation.

Ok, thanks– anything else you would like to add?

Don't get rid of cadavers!

Subject 6– Jake

I went to K-State for a BS in Microbiology, started a Master's program in Microbiology, left that program and went to KU for medical school, then a

residency in internal medicine at UMKC, then a fellowship in sleep medicine for a year, and now I'm in my final year of primary pulmonary critical care at UMKC, Do you remember the first time you took a course involving a human cadaver? My second year of medical school.

Do you remember the first day?

No. I honestly don't.

Did you take a full year of anatomy class?

I want to say yes it was a full year. Almost certain.

Do you remember feeling nervous?

I did not. It was another class. It was not my first foray into the studying of medical school.

Do you remember your instructors addressing the issue of respect for the cadavers or acceptable behavior in the lab?

Yes. I remember them talking a lot about the fact that these people donated their bodies, that we must be very respectful, and there were rules of the cadaver lab, that if anything was ever removed, you would be immediately dismissed from medical school, and that it was a big deal. They also emphasized that at the end of it they would cremate the bodies, and that there would be some type of burial service or ceremony.

Did you attend that?

No.

Did you know of other students that did?

I don't remember anything like that really, no.

Did you ever see students crossing the line with crass humor or jokes?

I don't remember that. I think everyone was pretty deadpan with it all.

Was that a challenge at all?

No, not so much.

Were any dissections more difficult than any other?

No.

Did you ever feel anxiety about cutting correctly?

Oh yeah. In medical school, the biggest thing was being able to dissect well enough that when you were tested over it, you would be able to identify the structures, and you would think that would be easy, but when you are dissecting out little veins and little nerves, and you are not an expert dissector, then that was very difficult. And there was a lot of pressure so that you could get the bodies ready for the test.

Was there much of an emphasis on how to use the tools or how to approach the various types of tissue?

I don't remember much of that. It was all pretty blunt dissection.

Do you ever still use cadavers?

No. Never. Except for a one week course up in Ohio– strictly procedures– doing traches, bedside chest tube placement....and I wish we did more of that here with our fellows, I think that would be really nice.

So you still consider it a useful tool?

I do for procedures. I'm not sure I do for an anatomy stand point.

Do you think you could approach that level of learning anatomy from virtual models?

Absolutely. Absolutely. Yep. I think it's an incredible amount of money to invest for not a lot of gain, to be honest with you. It's a lot of money. And I probably look at it a different way, but I mean, it's thousands of dollars to do this type of work. You know the bodies....they were ten or fifteen thousand dollars, and then the staff, and the cost of disposing of the formaldehyde....that's a lot of money.

So would you say that you still use skills today that you learned in the dissection lab?

Yeah. Mostly the procedures. The anatomy you learn in books. If I was a surgeon, I would say things would be vastly different, I'd say I would have to know that anatomy. But I have long since forgotten most of it.

Ok great. Anything else you would like to add?

I would agree that it was the first time that you are sort of invading another human body, and I always found it very professional, I would agree that it's probably the first time you have to deal with a human body and be professional about it. I never remember anybody being unprofessional.

Subject 7: Craig

I went to Truman State University in Kirksville, Missouri for undergrad, got a bachelor of science and a bachelor of arts– both in biology, graduated 2004, Went to St Louis University for medical school, graduated 2009, currently in anesthesiology resident.

Do you remember the first experience with a human cadaver?

August 2005. Very first course of medical school, actually, is anatomy. It was rough!

How so?

For me it was especially rough, because I got accepted to medical school one week prior to that course starting. I was like the last person inside the door, so I go from that– the elation of being in medical school– to a ridiculously hard course of anatomy. It was quite difficult. I guess I shouldn't be too surprised that I did incredibly poorly on the first exam.

So you were kind of thrown to the wolves...

Well I just didn't expect it to be that difficult– and that was a big eye opener for medical school in general, because medical school is incredibly hard. I couldn't believe how hard it was, after going through it. But that class gives me nightmares. They kind of tell you about the course– they have it at the beginning at my university. I have a cousin that his anatomy course was spread out over the entire semester, but we had that whole course crammed into ten



weeks. The first year they block the classes off– that's the only course you work on for ten weeks– it was hard to absorb everything they want you to know in just ten weeks, despite what my genius classmates would have thought.

Do you remember the first day of class?

Oh yes. The first day was the dissection of the back– I recall this lecture quite clearly because I was sitting in row two and luckily, they divided each team into days of dissection, so luckily I didn't get the first day of dissection, because I would have been so overwhelmed. I'm still overwhelmed right now. I couldn't even do that now. I don't think I'd pass that class if I took it now. One thing– right when you walk in the door, the smell just hits you– and you're like, wow this is disgusting.

Were you nervous?

Absolutely. I was scared of doing poorly. Looking at a dead body, I could deal with that, but just doing it well, you know your dissection, if you didn't do it well, then the rest of your team didn't learn very well because they learned off of your dissection.

What kind of instruction did your teachers give you?

Some people would try to get done quickly, but they would emphasize the process, you know, learning from every step. From this dissection, you understand that this nerve goes through this muscle, and they have you learn every little thing at every point, and you have this huge guide that guides you through it, and that was enormously daunting. They told us that we were not allowed to name our cadavers because that would be a sign of disrespect. We always had to make sure they were covered– especially the face– oh I forgot to mention the face because at St Louis University, all the bodies are donated to science. These are real people that chose to give their bodies up after they died for our dissecting purposes. So they are very adamant– don't do anything lewd or crude with the bodies, names are not cool, because these are real people. That's the first thing they told us actually.

Did you ever notice that boundary being crossed or stretched?

Actually no, I think we were all pretty serious about it all. Especially in the beginning. We were all scared in the beginning.

Did that become more lax as the course went on?

No, I don't think so.

Were some dissections more emotionally difficult?

I would say the craniotomy was interesting. You know, drilling a hole in the skull, and peeling back the skin of the scalp, that one would uh...meet that criteria.

That one affected you more?

Yeah, drilling into the skull. Ugh.

And you used a bone saw?

And the smell of the bone– um unique. Kinda smells like Fritos. Kind of like burning hair.

Did you keep the bodies covered mostly?

We kept the whole bodies covered except the parts we were using.

Did you ever have dreams or nightmares involving your cadavers?

No, I don't think so. I tried very hard to separate that stuff from when I was home– which was not often, but I tried to separate that. I got less sleep, but no, no dreams.

Did you find it difficult to separate the human aspect of the cadaver and think of it as a tool?

Actually no, surprisingly, I didn't have that problem. Just because we kept them covered the whole time, so you only focused on what was in your module.

Did you notice other students who had more trouble with it?

No fainting or anything, but there were some people who had trouble during the ten weeks. It wasn't my favorite course either, I hated it.

Did you ever imagine life circumstances for them?

Actually, we did, but it was more related to health– like if we saw someone with black spots all over their lungs, we'd say well this person was probably a chain smoker. It was more of a learning adjunct than a form of disrespect to the corpse. If you found complications in the aorta, you know, or the heart vessels, you would think this person had heart disease or stenosis or whatever it is. We did attach stories to them, but there was no disrespect at the same time. Any gross pathologic finding that you would see. That's as far as it went though.

Would you say that you are still competent to dissect a cadaver?

No. Not sure if I ever was.

Was it valuable for learning anatomy?

I do think it was. Whatever I thought at the time, which was that it was horrible, I think it really was helpful to get a good baseline view of how the body looks in general. I forgot most of that already, but it was very valuable back then.

Do you think you could learn the anatomy from virtual models?

I actually wish there was more of that, along with the cadavers, but as far as replacing them, I'm not sure I would be comfortable with that. I think just the physical holding it in your hands just does something for you. For me it sticks in my mind better when I do that, in my experience.

Thanks– anything else you would like to add?

That I really dislike the brachial plexus.

Subject 8– Josh

I went to SLU for undergrad, studied chemistry there, then Mizzou for medical school, and am in my first year of Ear/Nose/Throat at KU.

Do you remember your first experience with a cadaver?

The first day of medical school. They divide you up into groups– 4 people per body, so you walk over to the table with your group, and the cadaver is in a giant like plastic bag kind of thing, and then it's wrapped in thin linen to keep it

moist. And you've never seen one before, you don't know what it should look like, and you and your group have to get this plastic bag off and get the body on the table, and I think they purposely put it face down or some way that you have to flip it over and move it and position, so you get a feel for it. Used to dealing with it.

Did it look like you expected it to?

I don't really remember what I expected, but it seemed more.....prune-ish.

Were you nervous the first day?

Yeah, but it was the very first day of medical school, so there was a lot going on.

Do you remember feeling strange being around the cadavers, or being confronted with death?

I think I was more caught up in what I should be doing and that sort of thing. I don't know if that was sort of a protective thing, but I kept that in the front of my consciousness and was just doing what they told ya to do.

Did they have you start cutting the first day?

Yep. It was an awful dissection, because you had no skills yet, now you could do it do much better, but you had no surgical skills then...

Did they instruct you on how to use a scalpel?

Not really. I think that was kind of intentional, they said use the scalpels as little as possible, to do more blunt dissections with tweezers and forceps, not too meticulous on the technique, just limiting the sharp dissection, because then you don't know what you're going through.

Did they specifically address the issue of respectful treatment of the cadavers?

They did during orientation. We had a comical dean that said you know medical students are stressed out, rambunctious, mischievous creatures, because they are always doing something to relieve stress, but at any point if you use a cadaver as an outlet for that kind of thing, you will find yourself expelled quicker than anything at this school. He made mention of the sacrifice made by these people and that they were for educational purposes only. Anything else would not be tolerated.

Did you nickname your cadavers?

Most of them yeah. I think ours was called Judy. Nothing like abnormal physical characteristics or anything. Nothing derogatory.

Did you notice students crossing the line a little? Practical jokes?

Not so much practical jokes, but you know, when you are sawing in half the female anatomy, I don't know if it's natural or what, but you get an interesting emotional response and sometimes people would use humor to deal with it. So maybe some things were a little inappropriate. But nothing I would think was more than just a protective thing.

Which dissection were the strangest?

The female pelvis.

Did you dissect face and head?

Twice. Again as a senior, because I was going into Ear/Nose/Throat.

Do you still use cadavers?

Last time I did was last year, and I will again next year. You use them as like a surgical dry run, to practice a procedure. You practice a sinus surgery or a parotidectomy or something. Temporal bones– we do that all the time. T–bone labs. The ethics of the decision, you know, a practice surgery first on a cadaver is better than just starting a living patient– its much safer.

Do you think you could approach the same level of instruction with models or virtual dissection?

Depends. For medical purposes, the extent that you need to put lines in, or just understand the role of anatomy in diseases, you probably could. But for a surgeon, there's no way. You need the three dimensional relationships, the use of the tools.

So for you there has been a lot of emphasis on the procedure, how to cut....

Right

Did you ever have any dreams or nightmares?

I don't recall anything like that. I remember dreading it. It wasn't my favorite 4 hours of the day, in that lab.

How long was your class and how often?

We had it a whole year– three times a week. Monday Wednesday Friday.

Subject was then paged and had to leave interview.

Subject 9– Matt

I got a BA at St. Olaf College, following that I was at the University of Minnesota for medical school, and sense then I have been in Kansas City working in Emergent Room care.

Do you remember your first experience with a human cadaver?

I actually got to see one in an observation course in undergrad. But didn't do any cutting. The first day it was kind of a different thing. I had never before used a former human being as al earning tool, so that was pretty intense.

Were you nervous? anticipatory?

Maybe a little anxious, I guess. The first time– we didn't get to see the dissection. We were in small groups, and the dissection was already done. There were I think eight groups, and one would see the dissection, and the rest would come in later. So you had a one in eight chance I guess of seeing the dissections.

Did you glove up and touch the cadavers?

Yes.

So did they address the issue of respect for the cadavers?

Oh yeah– they definitely wanted us to have respect for the people that donated their bodies– for us– that was very clear.

What behaviors would have been considered unprofessional?

I don't know how much they spelled it out, but they didn't want a lot of joking around, even with– in any way– especially towards the cadaver. Don't pick up body parts and stuff.

Did you nickname the cadavers?

No. There was just the one, so.....

Was the situation the same when you later got to medical school?

Yeah. In medical school it went even further– they really stressed the sacrifice that all these people had made to give us this hands on learning. There was even more of a focus on being respectful– that time we were actually cutting. A little more invasive.

Did you find yourself reacting more strongly in medical school?

Yeah actually– in Minnesota it's your first class and you take four hours of lecture in the morning and four hours of dissection in the afternoon, so it's a really intense– but a great way to start. I had a great experience.

Were you a gunner?

No I was never labeled a gunner. I sat in the back row if that tells you anything. And how many cadavers did you work one?

We just worked on one body, but just in our room, there were 16 bodies, and there were 54 total, so we got to go look around at the anatomical variations or abnormalities. I got to look at all of them.

Did they nickname cadavers?

No they didn't want us to make up names for the cadavers. It's not the greatest thing to do.

Did you notice students that blew off steam or relieved stress with jokes or crass humor?

I think that's unavoidable, there's gonna be some comments, when you are doing eight hours a day plus with it...

Did they emphasize procedure– learning to use the tools?

We did get learning on tools and dissection techniques. We got a little education there too.

Were you tested over those skills?

No.

Did you see students inventing life circumstances or personalities for the cadavers?

Just things like seeing black lungs and saying that person was a smoker or something. Figuring out cause of death and stuff like that.

Would you say you are still competent to dissect?

I would need a refresher but I would feel pretty comfortable diving right in.

Do you still use cadavers?

We do, actually, for some of the more rare procedures that we don't get to practice that often– we get the opportunity to see the cadaver to practice those. Once a year at least we do some practice.

Did you think the cadavers were necessary for learning the anatomy or could you do it with models or virtual dissection?

Oh definitely. There isn't a better way than cadavers. I wasn't aware of any software then that would be a substitute, or if there is now. I think as far as— and we use the cadavers for testing as well.

What do you mean by that?

They would tie off a structure and ask you what it was.

Oh— testing for the anatomy class.

Yeah— I don't know how you would test students if you didn't have cadavers to tag.

OK thank you— anything else you would like to add?

M. Just that for me the experience was amazing. It was a great foundation for the rest of my medical education. I think that the way we did it— using the cadavers for learning— I mean like I said I don't know how I would have done it otherwise.

Interview 10— Jeremy

I went to Kirksville College of osteopathic medicine, in Kirksville Missouri. I went to undergrad at Weaver State University in Ogden, Utah. I majored in Zoology.

Do you remember your first experience with a cadaver?

Yes. It was in undergrad. As I recall, it was prosecutions mostly, so I didn't do any of the dissections personally, but they had been pre-dissected, and about thirty students at a time would go stand around the dissection in a circle while an instructor would point things out to us on the cadaver. It was never a complete cadaver— it was always a leg that had been removed a prosected or a thorax or different components, but never the complete thing.

So by the time you got to medical school, you had actually seen the cadavers, but had not done any of the cutting yourself.

Exactly.

Were you nervous to begin cutting?

A little bit, yeah, but that faded after about ten seconds.

So the first time you saw them or cut them, did you find yourself reacting emotionally at all?

J. No.

Not an issue for you?

No.

Were you excited to see them?

No. Not excited or anything. Indifferent.

Did they address the issue of adjusting to dealing with cadavers?

Yes. Which was helpful, I think. They talked about the cadaver being a person, that lived a life, and so respect the cadaver. And so I think the attitude of

myself, as well as other people, which I think influenced my attitude, was your respect the cadaver for it's use a learning tool, and I think that removed a lot of emotion from the experience and so then it's just a way to learn anatomy. But I think originally, most people, including myself, thought that it's gonna be weird, because it's a living person, but actually seeing it was different than I expected.

Did you expect more of something that looked like a sleeping person?

Yes.

But it's not like that?

No, it's very different.

So that clash of expectations and reality was one way for you to sort of remove the personhood of the cadaver?

Yeah.

And they addressed that, which you found helpful.

Yeah.

What did they emphasize for you to do or not to do?

There's a long list. To never play with the cadavers. To never take any of the body parts home. Never to speak ill of the cadaver. And that was pretty much it.

Did you ever find those boundaries being crossed or approached?

No, I actually never did. I don't recall any comments or horseplay with the cadavers, which was what they specifically addressed. Problems that had been experienced. So I think that they struck fear into our hearts. Because they said if they see that, then we would be punished. And I never saw it happen.

Did you use nicknames for your cadavers?

Yeah. I know that some people did. But usually we would nickname other people's cadavers because there would be an interesting finding. I remember one guy had a penis pump, and they nicknamed him, although it didn't have anything to do with the penis pump, that would be inappropriate. But to identify other peoples cadavers, we kind of had to have nicknames, because we had close to forty or fifty cadavers. But I never nicknamed my own. Usually had to do with age or body part or characteristic.

Do you remember any examples?

There was a young lady who was an athlete, and I'm trying to remember what we called her. Because it's really rare to find one that was young and in good health. So I think we called her the Perfect Cadaver or something like that.

Muscles, and not a lot of fat.

Did you notice other students that struggled with it more than you did?

Not really.

Did you keep the faces covered?

J.Yeah.

Any other body parts?

Anything we weren't working on. So there was a full body blanket and a cloth for the face. Pretty much everything.

Did you dissect the face?

Yes.

And brains and eyeballs?

Yeah. The face was little– I remember the first time seeming pretty strange the first time you cut into a face. It's a bit more personal, and the skin is different and the muscles are right there, so it is a little bit different feeling– it's difficult to describe, but a little more personal than the others.

Did you ever have any nightmare or dreams about cadavers?

No.

Would you feel competent to dissect now?

Yes.

Do you ever use cadavers now as part of your training?

No. Not since med school